Smithsonian

September 1984

Before retiring as Secretary, S. Dillon Ripley displays Canada goslings at his sanctuary (p. 76)

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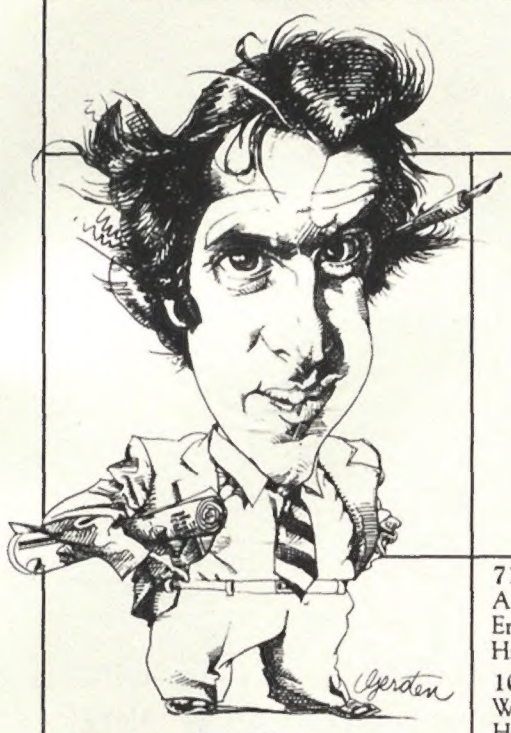

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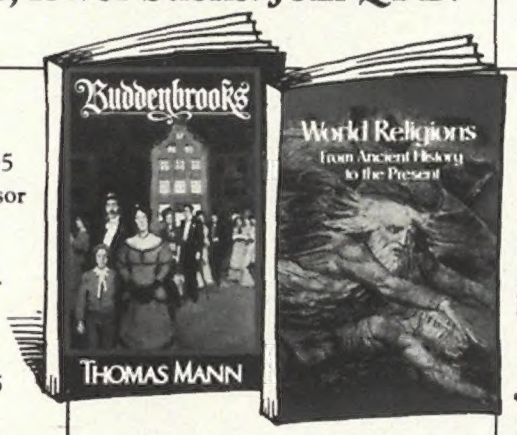

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September 1984

Smithsonian

Volume 15, Number 6

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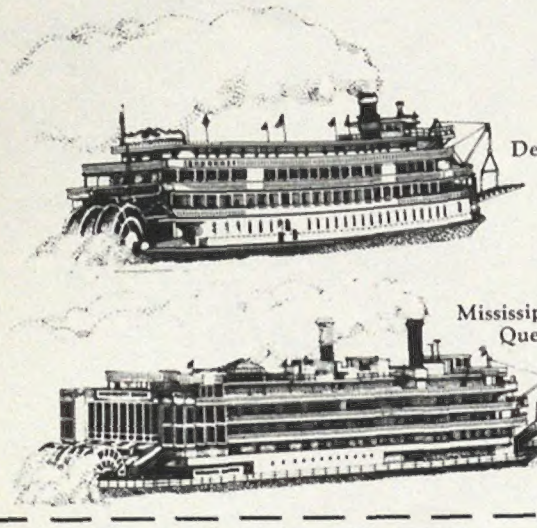

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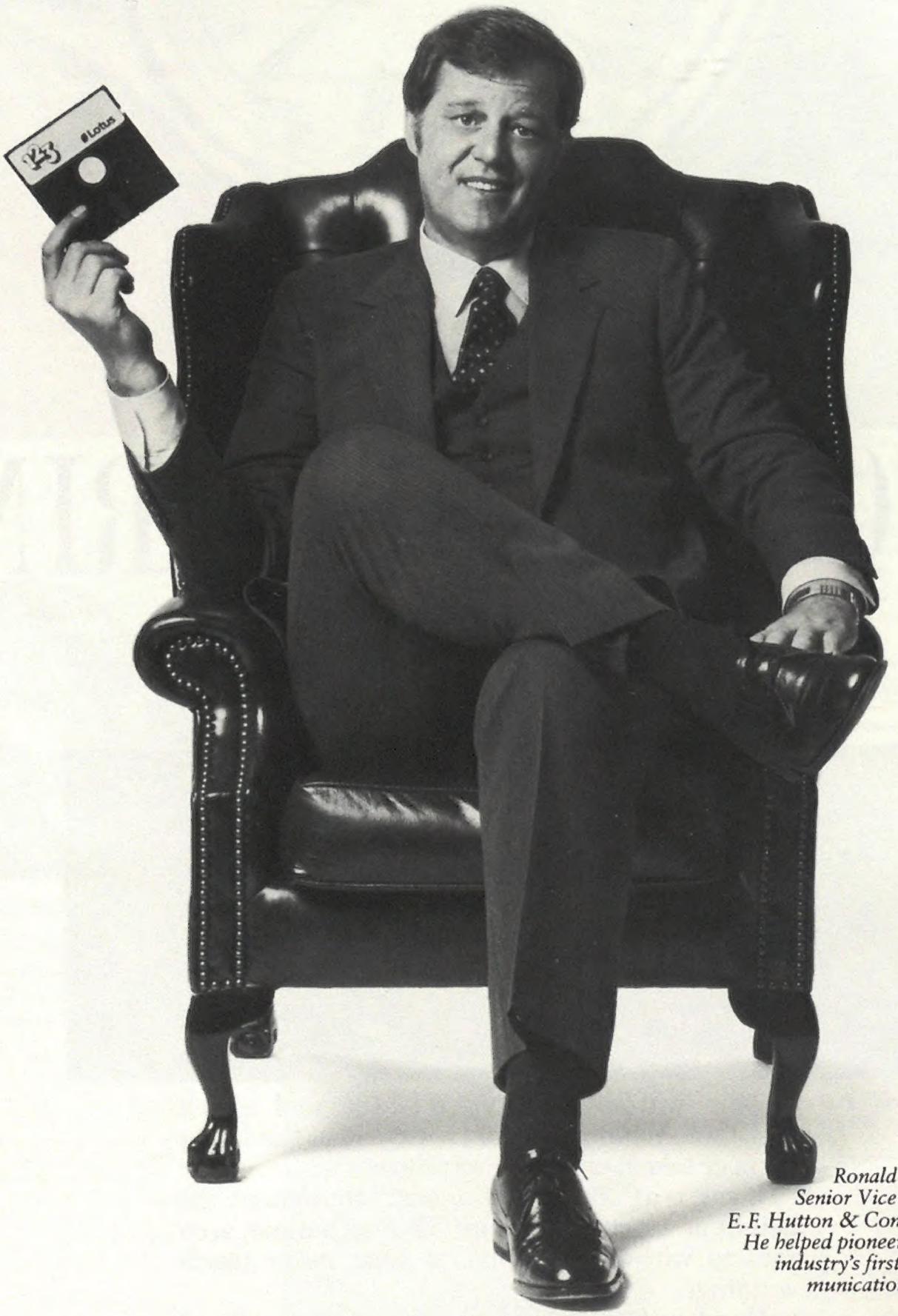

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Secretary Ripley's comments

The view from the castle

The job of being Secretary of the Institution is complex, full of fascinating responsibilities, a learning process and, above all, pleasurable

This is my 174th *View from the castle,* and it seems perhaps an auspicious moment to quantify some of the feelings and reactions I have had in more than 20 years as director of the Smithsonian. The job of being Secretary of this Institution is one of the most complex and pleasurable in the world. To me the Smithsonian has a hypnotic fascination. What is it and why? We shall probably never be certain of the true meaning of its noble founder's words, "for the increase and diffusion of knowledge among men," any more than we can keep totally abreast of the task of interpreting history, art and science in all their manifold forms every day—past, present and future.

I can only say that the job has been a joyous one. It is a fascinating collection of responsibilities which seems to bring one new facets of information every day—an encyclopedic exercise.

A particular and never-ending satisfaction is that in the process of creating the Associates and introducing you to the Smithsonian in all its ramifications, I feel that I have contributed to your pleasure and your enlightenment. You have become a part of the Smithsonian (which perhaps you did not realize belonged to you), an Institution that our government had pledged to support on your behalf in 1846.

Another aspect of all this is that Congress and the government are immensely proud of the Smithsonian, just as the public is. It seems to shed a glow over the Mall that is both stimulating and reassuring. There is electricity, and surprise, and sometimes shock. This excitement pervades the place; it is a reason for the pride we take in it. Those of us here find that excitement all-consuming.

In 14 years, SMITHSONIAN, our magazine for the Associates, has achieved much of what we set out to do. Like the rings of the Olympic symbol, our goals were interlocking: to explore the things that the Smithsonian *is* interested in, *might* be interested in, or *ought* to be interested in.

As with the seasons, the ends foreshadow the beginnings. What we know provides a measure of what we do not know. What we do not know presages what indeed we may know in the future. At the Smithsonian we have believed that life itself is an endless opening up of more opportunities for learning.

My esteemed successor and friend, Robert McCormick Adams, comes to the castle this month. Steeped in the values of history as seen through the eyes of an ecologically-minded archaeologist, he will, I know, exemplify those qualities enumerated in a resolution presented to the Board of Regents in December 1846 by one of its members, Robert Dale Owen (a Representative from Indiana who had played a crucial role in the acceptance by Congress of the Smithson bequest): ". . . that the Secretary of the Smithsonian Institution be a man possessing weight of character and a high grade of talent . . . eminent scientific and general acquirements . . . a man capable of advancing science and promoting letters by original research and effort . . . a man worthy to represent, before the world of science and of letters, the Institution over which this Board presides."

Amen!—and may the job be a joy and filled with fun.

S. Dillon Ripley

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Letters to the Editor

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Dear Sir: Bartholdi's unusual design, which was described in your July issue, could have been inspired by Apuleius' second-century A.D. classic, *The Golden Ass*. Lucius, the main character, after having been initiated into the rites of Isis, states "... by order of the priest, I climbed a wooden pulpit which stood in the middle of the temple. . . . I wore a vestment of linen . . . a costly cope hung down from my shoulders to my ankles. . . . In my right hand I held a lighted torch; and a comely chaplet was wound round my head, from which the palm-tree leaves jetted like rays of the sun."

Hank Kelly
Norwalk, Connecticut

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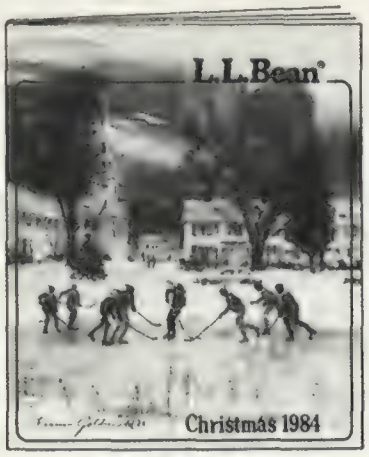

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bartered to Varjian's lawyer in payment for services rendered.

And here she is, after a blizzard, up to her eyeballs in frozen snow (below).

Kristin Anderson
Madison, Wisconsin

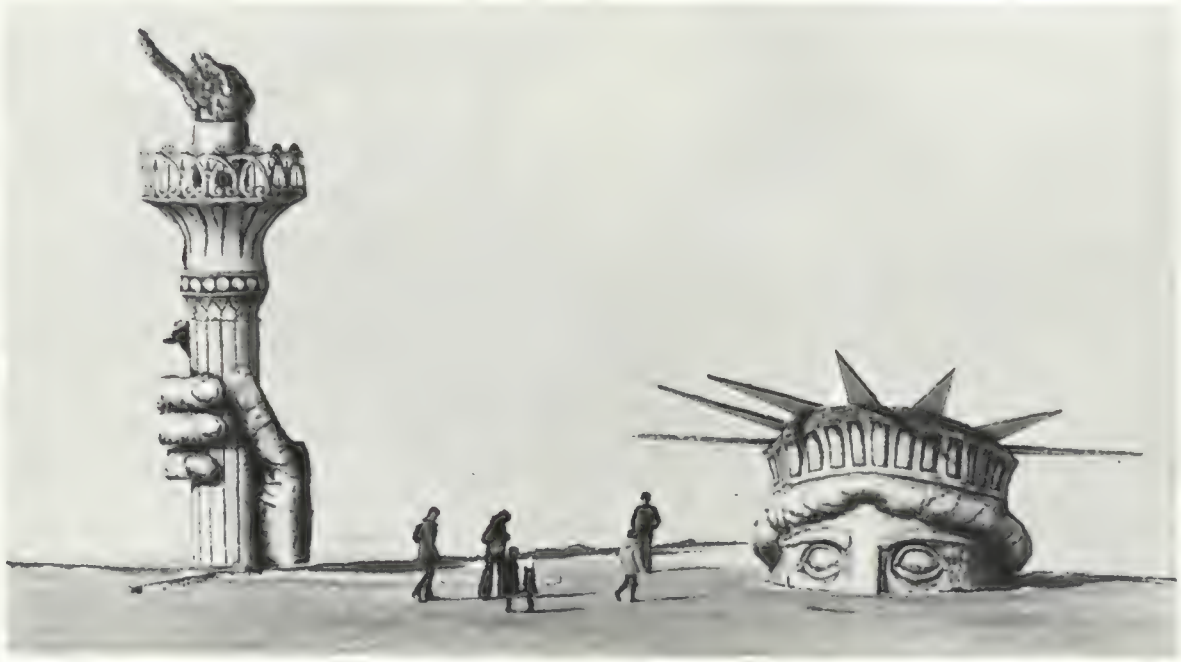
Dear Sir: On reading your article, it struck me that you were missing an important "Statue of Liberty." In Milwaukee on May 18, 1919, the Poale Zion Chasidim staged a pageant depicting Jewish history throughout the ages—and the young woman with torch aloft (bottom) was none other than Golda Meir! Incidentally, the Abraham Lincoln to her right is my now 88-year-old grandfather, Jack Feller.

Jody Sussman Steren
Milwaukee

Gardens at Monticello

Dear Sir: Jefferson still lives at Monticello, as he does in the hearts of his remembering countrymen. With the exception of the Declaration of Independence, no finer monument exists as a testimony to his genius than Monticello and its lovely gardens.

David S. Kerr
Carlisle, Pennsylvania



George Lupo

Martha Woodward (2)

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Watteau

Dear Sir: I am disappointed that you missed the opportunity to mention the reference to Watteau's paintings in Gilbert and Sullivan's *Trial by Jury*, where Angelina's counsel speaks as follows of the tenderness shown by Edwin before he turns his attentions elsewhere: "Swiftly fled each honeyed hour/ Spent with this unmanly male!/ Camberwell became a bower,/ Peckham an Arcadian Vale,/ Breathing concentrated otto!/ An existence *à la* Watteau."

Of course otto is a floral perfume, a distillation from rose petals, chiefly those of the damask rose. Fits beautifully in the Watteau scenes. Small wonder that Angelina was smitten.

George H. Spencer
Washington, D.C.

Safecracking

Dear Sir: Tony was a lovable person and a hard-working craftsman, employed by our ornamental ironworks from about 1927 until 1954. Prior to traveling to his native Italy, he came into my office to say goodbye. I wished him bon voyage and safe crossing, and Tony promised to bring me a remembrance from the old country.

Four months later he appeared with a large package wrapped in newspaper. He opened it proudly, to show me a product he thought we might manufacture. I was looking at an enormous, extremely elaborate lock-and-key set, reminiscent of the 16th-century French "masterpiece" on page 36 of your article. It included a pistol, fastened to the inside. Tony explained: "Mr. de Gisch, you try pick this lock, it kill you."

Needless to say, we failed to put Tony's offering into production.

Henry Gichner
Washington, D.C.

Lydia Pinkham

Dear Sir: Unpacking the stores at Little America on Rear Admiral Richard E. Byrd's Second Antarctic Expedition in 1933, the totally-male group of explorers and scientists got quite a surprise.

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which even the supply officer couldn't render a satisfactory accounting."
Sue Avery
Franklin, New York

Dear Sir: Your story took me back to the year 1902. A neighbor discovered that my mother's brother was a doctor, so she asked him to buy for her two cases of Lydia Pinkham's compound so that she could enjoy the wholesale price. This he refused to do. He told her to drink more water and buy a bottle of whiskey if she liked; he thought that might have the same result.
Louise M. Ford
Deerfield, Illinois

Dear Sir: Lydia Pinkham's reputation for helping "our best female population" continues unabated. Within the past seven years, one of my relatives wrote us crediting the birth of her eldest daughter, in part, to Lydia Pinkham's nostrum.
A. C. Grover
Southbury, Connecticut

Superconductivity

Dear Sir: Those ideas which are at the foundation of the maglev systems being developed in Japan and Germany originated in the United States, and the reason this country is out of the running for further development is a 1975 decision of the Office of Management and Budget which stopped what little funding there was at that time for advanced ground-transportation systems.

In the early days of transportation, ideas originated in Europe—the Otto and Diesel engines, for example—and were adapted to mass production in the United States by Henry Ford and others. Ironically, the situation now seems to be reversed. We develop cryogenic, maglev, control and computer technologies and wind up buying the product from Japan or Germany.
Henry H. Kolm
Cambridge, Massachusetts

Veterinary school

Dear Sir: How does a 400-pound tortoise break its leg? A skiing accident, perhaps?
Peter N. Rose
Gig Harbor, Washington
While copulating. Ed.

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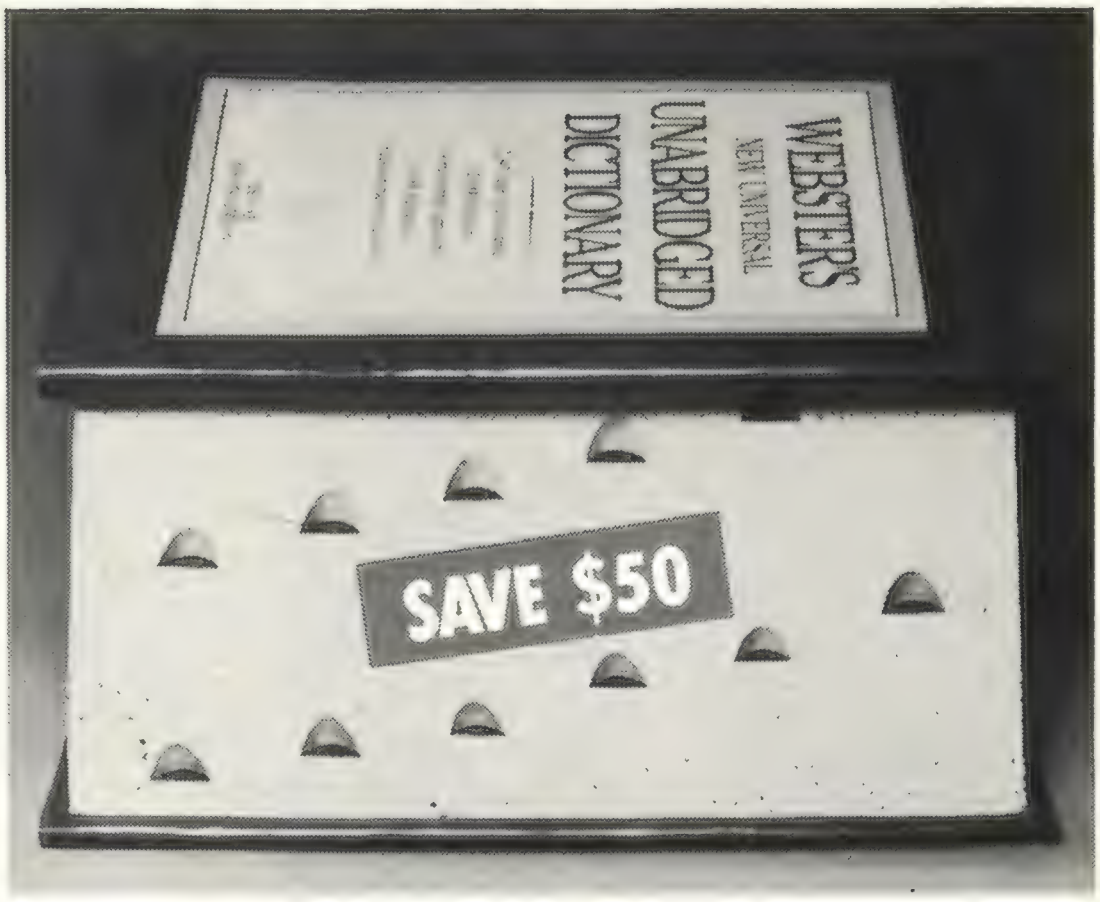

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Victor Th. Engwall

There was a time before mass production when men expended great care on everything they created. From this obsession with perfection came such treasures as the fabled Fabergé eggs, graceful Chippendale furniture, Napoleon brandy. In 1853, in Sweden, Victor Theodor Engwall was seized by the obsession to achieve perfection and coffee was his metier. To produce nothing less than the world's finest coffee was his dream. He founded the company that still bears his name in the small seaport of Gävle. For it was here that the sailing vessels came laden with green coffee beans from the best growing areas of the world.

Day after day he sampled the beans, searching for the best. Then he roasted and blended, tasted and tested in what was to be a lifelong quest. To his fellow townsmen his name became a synonym for superb coffee. And when he handed the family business along to his sons, he handed along the Engwall obsession. So down through the years the striving continued, to produce the ultimate coffee. To this day, Gevalia is still made in Gävle, by people imbued with the Engwall ideal. And generations of Swedish Kings have given it the Royal Seal.

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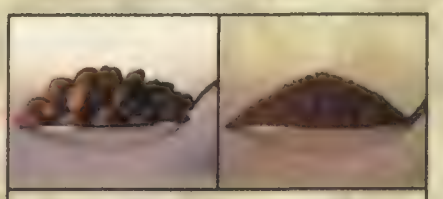

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To send for Gevalia Kaffe, please read the details of this offer in the attached order form; fill out and mail it today. For your convenience, it folds and seals to become a pre-addressed envelope.

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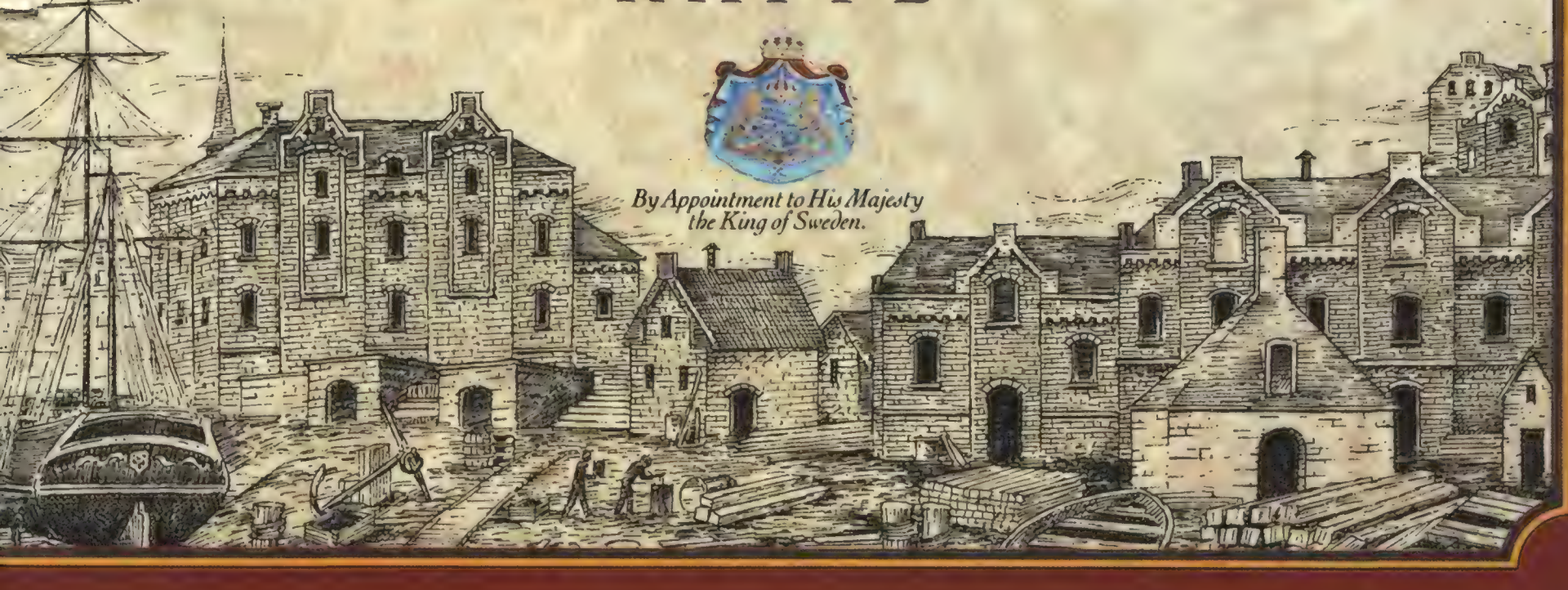

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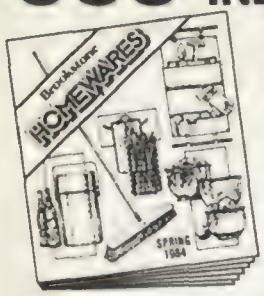

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Around the Mall and beyond

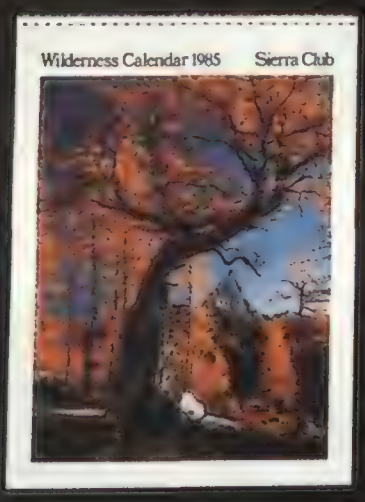
It had been six months since I had visited the National Zoo—on a bitterly cold day (see this column for March 1984). So, on one of the hottest days of a steamy Washington summer, I returned for a seasonal check on my friends there. Also, I wanted to meet the baby elephant that had been given to President Reagan by the President of the Democratic Socialist Republic of Sri Lanka. "You *must* see it," said a young woman at the office. "It's so *cute*!"

Despite the staggering heat and humidity, the zoo was crowded, especially around the elephant house. I had to sit and wait in my non-air-conditioned car until a slip opened in the parking lot where I could moor. The sun struck my head like a soft mallet as I waded through half an acre of small children (what a contrast to the last time, when I was almost the only soul stirring here!) to the inviting shade of the elephant house. Reaching it, I found little change in temperature, and a great deal more humidity. In seconds my shirt was soaked. Then I joined the delighted youngsters at the baby elephant's enclosure and lost track of my discomforts.

When I saw her, Jayathu (the "th" is sounded like "t") stood a little over a yard high and weighed 327 pounds. When you read this, she will be heavier, but not much taller. Elephants, you see, grow slowly. Also, Jayathu is sort of small for her age. That's due to a precarious infancy. Her herd was driven from cropland in Sri Lanka and she fell into an abandoned well. She was rescued, but raised in an elephant orphanage, missing out on a mother elephant's TLC. She's now about 20 months old.

She was playing with a large ball in her enclosure, while Curley Harper hosed the

Sample



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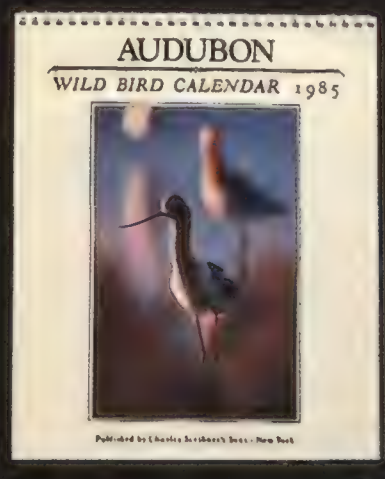

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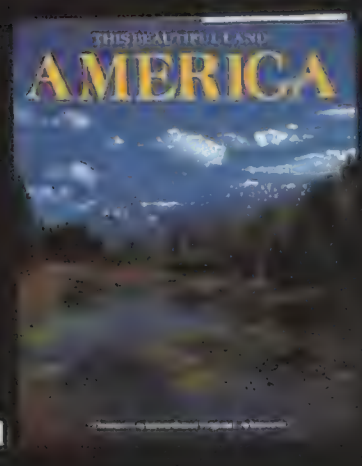

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place down. He's one of her keepers—a big man, towering over Jayathu, but weighing considerably less. A group of children under the charge of a very warm woman lined the railing trying to draw her, but they hadn't got very far before Mr. Harper opened the outside door, kicked the ball out and gently persuaded the little elephant to follow it. She stood at the door for a moment, looking exactly like a wee Babar, and tested the air with her trunk (about 18 inches long) before braving the heat. The kids tucked their drawings under their arms and went out, too, following the warm woman around to the yard. I followed the kids.

A voice was coming from a loudspeaker, explaining that the baby was still in quarantine after her journey to Washington and so could not mingle with the Zoo's two other Asian elephants, my old friends Shanthi and Ambika. But these two females, lolling and dustbathing in the heat, now reached their trunks toward the little one next door to get her scent, and then ambled toward her. Jayathu headed joyfully toward them and would have squeezed through a gap in the heavy wooden fence, but Harper diverted her.

"Quarantine will be over in a few days," Mrs. Patsy Lozupone, a FONZ (Friends of the National Zoo) volunteer boomed over the loudspeaker, "but even then, the keepers will be very careful about letting the baby mix freely with the other elephants." Mrs. Lozupone told me (sans loudspeaker) that you can't be quite sure about how elephants in captivity will react to each other. "The big ones may not like the little one at all." One petulant kick from Ambika (10,690 pounds) and good-bye Jayathu.

Mrs. Lozupone is called an Elephant Training Interpreter. "All that means is that I'm into elephants," she explained. Endearing as they usually are, she said, they can be dangerous without meaning to be. She reminded me that Ambika, who is 35 years old, couldn't stand Shanthi at first. Shanthi was young and cute, and Ambika might have been jealous. Now Shanthi is eight and the two are good friends. Shanthi stands seven-feet-ten, which would be pretty formidable for basketball, but is still four inches less than Ambika. The older elephant, moreover, outweighs the younger by one and a half tons.

It was bathtime for little Jayathu. Harper tossed the ball into her pool. Jayathu looked at it dubiously, tottered toward the edge and tested the water with one foot. It obviously seemed much too wet. She turned away, determined not to have a bath despite the blazing heat.

Harper blocked her escape. She dodged. He jumped in front of her. She feinted in one direction and danced off

Baby elephant Jayathu, a gift from Sri Lanka, is cradled in the arms of Kathy Wallace, one of her Zoo keepers, during cooling bath in the pool.

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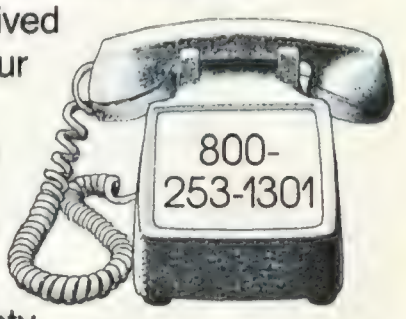

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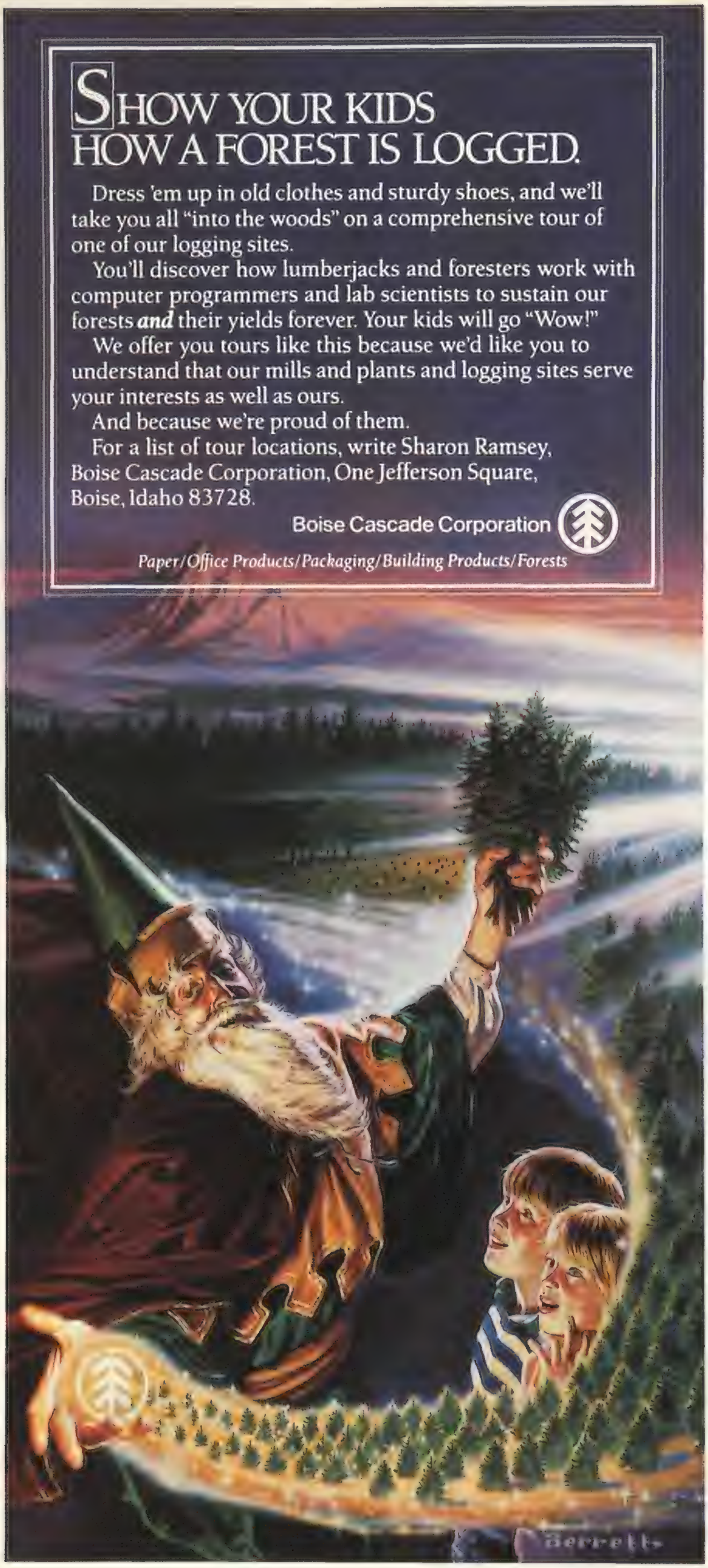

in the other. He managed to check her again and then simply gave her a great shove into the water.

She didn't like the pool at all this time, but before she could scramble out, Harper doused her with a bucket of water, cooling off her head and back. Then he let her bask happily in the heat, which probably reminded her of Sri Lanka's. Ambika and Shanthi sniffed over the fence, and one of them made the sound your kid makes the first time he tries to play a trombone.

"Elephants make all sorts of noises, from purrs to real trumpetings," said the loudspeaker, courtesy of Mrs. Lozupone.

"I finally got a drawing," said one of the young artists.

Harper decided that was enough Sri Lanka-type weather for *him* and headed for the elephant house. The baby didn't want to come. He called her and started running with short little steps toward the open door. She followed instantly, running the same way, a funny, waddling trot. All the Jayathu watchers went around to the people's entrance again. No one ran.

"Jayathu is attached to all the keepers," Mrs. Lozupone told me. "To Miss Wallace, Miss Holden, Mr. Jones and Miss Easter, as well as Mr. Harper. She needs lots of play and lots of touching—that's what she'd be getting in the wild with her own parents and the herd."

Young elephants apparently love to chew on sugarcane and often peel off a manageable-size piece with their trunks while holding the larger piece down with a foot. One night during Jayathu's first couple of weeks at the zoo, a trainer lay down with her in her cage to help her relax and get to sleep. They both finally fell asleep, but the trainer was roused by the shape of a small elephant hovering over her and a small tug on her right index finger. Jayathu had awakened, picked up the trainer's hand with her trunk and was avidly sucking on a finger. The baby elephant then released the finger and—just in time—the trainer noticed a small but potent foot lift up and start to descend upon her hand. As with the sugarcane, Jayathu hoped to detach a manageable-size piece on which to suck.

Harper was rubbing Jayathu behind the ears and playing water from the hose all over her. This she loved, turning her head from side to side under the stream,

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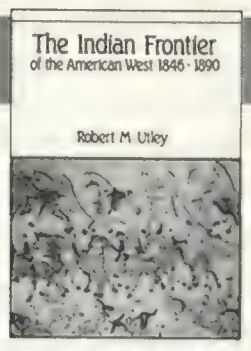

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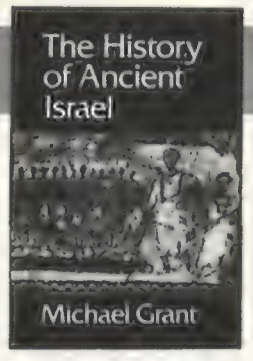

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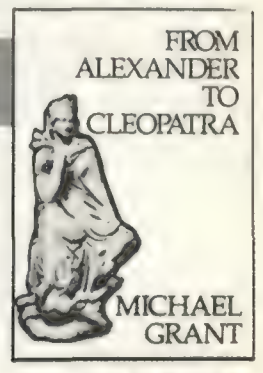

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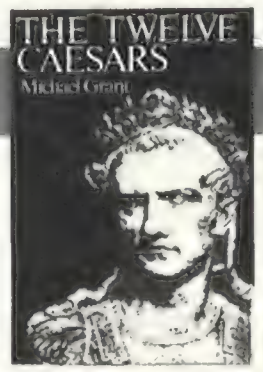

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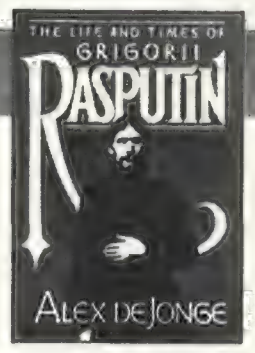

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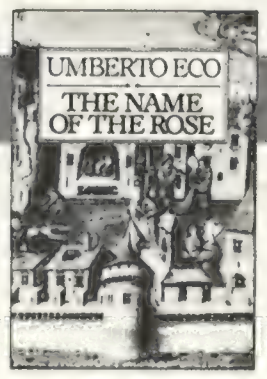

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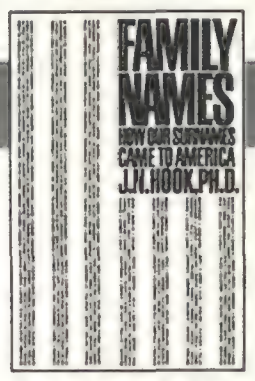

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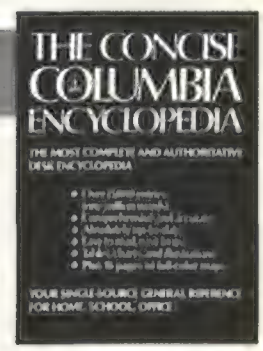

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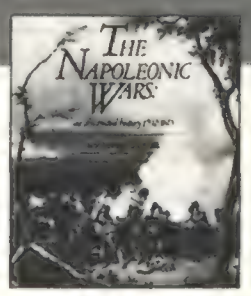

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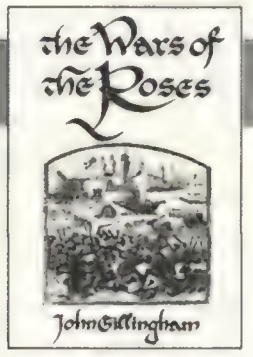

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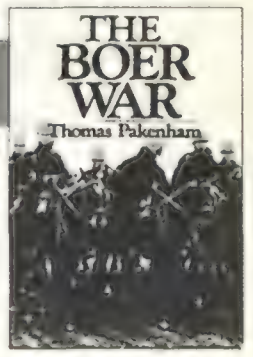

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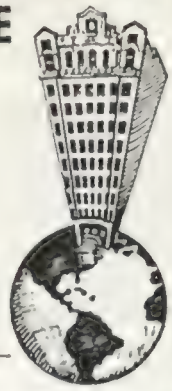

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sticking her trunk in her mouth for a good suck. Pretty soon it would be time for her formula—evaporated milk and boiled water with vitamins, minerals and baby cereal served up in a liter-size plastic bottle topped with a large heavy-duty nipple. Jayathu gets about a gallon of this stuff five times a day. For this orphan, life could be worse. Being the ward of the President of the United States is almost as good as belonging to Daddy Warbucks.

I left my little friend in good hands, and ventured outside again to see how other older acquaintances were handling the heat. Nancy, the African elephant, was playing in her pool, sticking her tusks through a huge tractor tire and heaving it into the air, catching it with her trunk as it came down, all the while half-submerged in the water.

All the birds had their mouths wide open, ventilating for all they were worth. I checked in with the ostriches, who, one spring, had behaved with utter abandon right before my eyes. Now they were not in the mood. I thought of that song from *Kiss Me, Kate*—"Too Darn Hot."

It was so hot, in fact, that the whole Zoo seemed smothered in a strange silence. No great roars, no calls from the gibbons, no screeches from tropical birds. And hardly a sound from the humans.

I then headed for Lion and Tiger Hill. Today there was no sound, no movement. A lion sprawled in as much shade as he could find, his maned head half over a wall. A tiger was zonked out in one of the little caves on the hillside. Then I came around the moat and suddenly confronted a beautiful white tiger—a nine-year-old female named Bharat—almost entirely submerged. The great head rested on shore; the rest of the mighty body slopped in the water with complete indifference. No playing with the empty beer keg, no slow swimming, nothing but total sloth.

My God, I thought, is it dead?

Then a ubiquitous fly passed near her and one great white ear twitched. That was all, but I was relieved. I also was suddenly determined that this midsummer madness must cease. Every resident of the Zoo was handling this dreadful day more sensibly than I. Back home I knew of a pool where I could slop down, head resting on an inner tube, and put in a half-hour of sloth myself. The prospect was irresistible.

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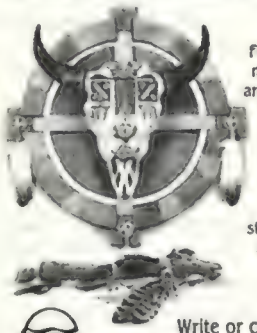

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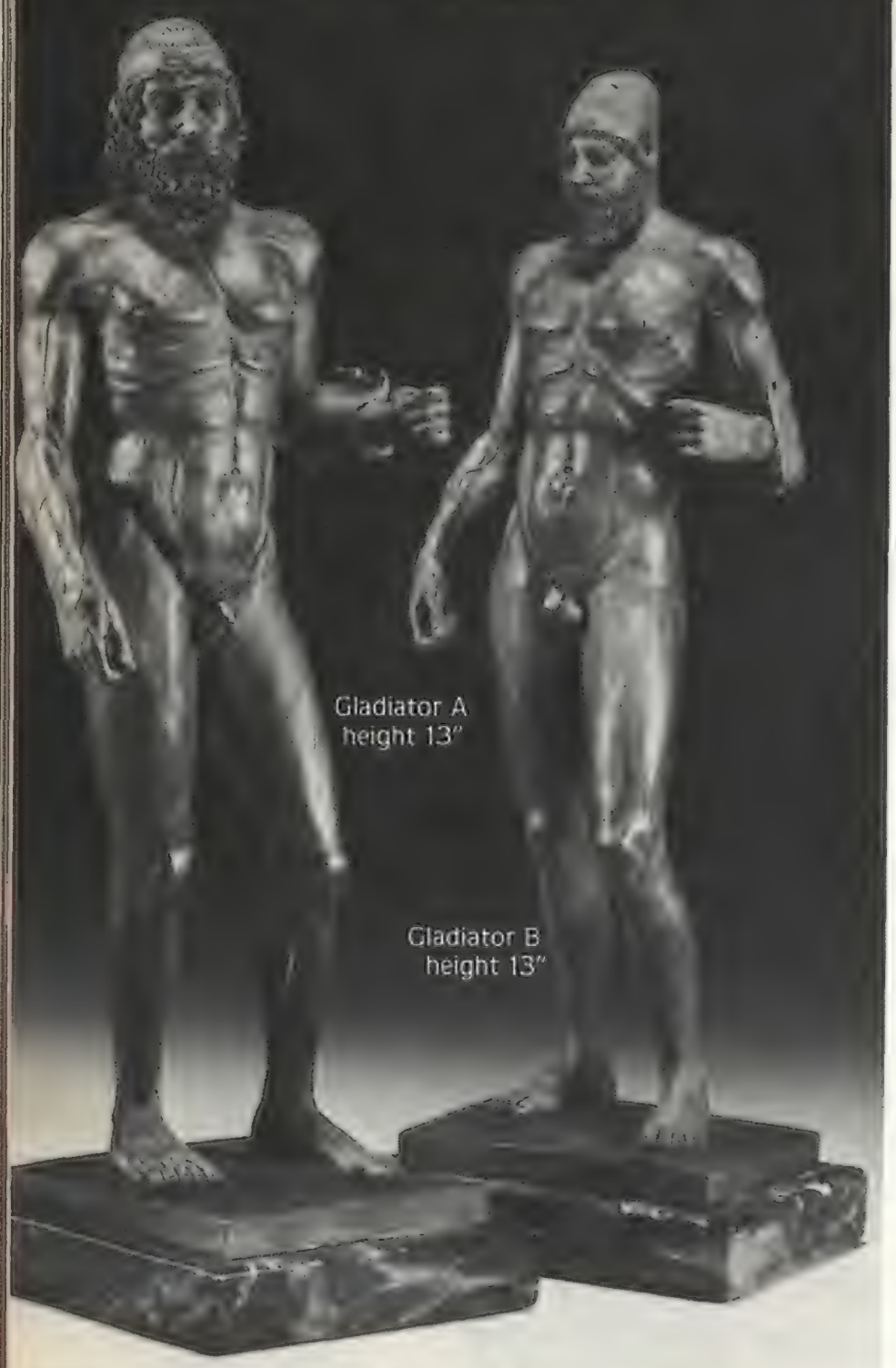
Heroic Bronzes of Riace

The First Olympians



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Phenomena, comment and notes

It can be totally absorbing to figure where a moving ball will be at some future time and arrange for a stick—or hand—to be there

Once the ball is in the air, nothing else exists. The game changes instantly from boredom to some higher state of consciousness, some supernatural concentration on a simple sphere moving through the air. Thought ends. No worries now, no dreams. There is only the ball against the sky, rising like a rifle shot, then arcing back to Earth. A moment ago one was a study in idleness, hand on hip, kicking at the grass. Now one is running flat out, oblivious to the rest of the world and protesting leg muscles, intent only on being there when the ball comes down.

The same thing happens at bat. Once the pitcher lets go of the ball, nothing else exists. Time slows almost to a stop. The ball looms larger and larger, spinning as it drops, while one feverishly considers whether to swing, when to swing. The decision is made in milliseconds. The back leg drives, body rotates, arms swing, wrists snap. If all goes well, there is a satisfying *thwock* and the ball departs.

Baseball is a far cry from science and natural history, the usual subjects of this column, but one could argue that a lot of science is involved. The angle at which a fielder should throw a ball to get it to a base the quickest is a question of ballistics. Equations will tell you the speed of a baseball as it leaves the bat. The recent suggestion that an outfielder calculates where a fly ball will land not by vision but by changes in his inner ears as his head tilts is applied physiology. One could even make the tongue-in-cheek argument that long hours in right field provide an opportunity to sample the local bird life. (At one field in Key West, ospreys nest in the lights.) But any such arguments would be egregious rationalizations. This magazine, like its parent institution, is interested in all of life. We certainly want to report advances in human understanding of the world, whether that world be in the interior of atomic nuclei or in the mystery of how a tiny bird can navigate for thousands of miles. But if, on summer evenings all over America, groups of people come together to try to hit a ball with a stick, that's worth reporting, too. In fact, it's hard to resist.

Not only softball but baseball itself can be played at any age, I have discovered. It is not as pretty, but it is the same game—right down to the mannerisms—that the professionals play. And the level of play often rises to the occasion. When a shot to the outfield goes between and beyond the fielders, a classic race begins, a contest between the batter who is now running the bases and the fielder who runs to the ball and makes a desperation heave. Once again the ball is in the air, and it is not always clear which will arrive first at home plate.

During the summer I played both games, on teams composed entirely of anybody and everybody who showed up. The baseball games were at a field in Maryland appropriately called Rocky Hill. Ingenious adaptations made it possible to play with as few as four people on a side (half the normal field is declared foul territory; the team at bat provides the pitcher; when five runs have scored, that half of the inning is over). It is a friendly game, and the quality of the pitching varies exactly with the abilities of the batter. College players see nothing but curve balls. Middle-aged men flail at fat pitches grooved over the middle of the plate. Youngsters see the ball lobbed in a gentle curve.

Pitching aside, everyone is free to do

Players become a study in concentration as a ball arcs through the summer air.

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his or her best. Batters swing for the fence and fielders play the ball as though a World Series were at stake. The game *is* a series of chances to excel, moments when everything turns on one individual's efforts.

Part of the fun at Rocky Hill is watching whichever of my sons has turned up to play that day. Seeing one dig a hot grounder out of the dirt with nonchalance, or another wheel at the crack of the bat and run down a sinking line drive with a sliding catch is a priceless dividend for all those hours in the backyard with little people just learning to throw and catch and hit. Their initial fear of the ball is long forgotten and they have progressed far beyond me. Once I pitched to them, first as gently as possible, then with a more level throw and finally as hard as I could throw. But I cannot throw hard enough to interest them now; my "fast ball" looks like a change-up to them.

When they first played organized ball, a hit to them was a heart stopper. Would they misjudge the fly? Would it bounce out of their glove? When one came to the plate, my only hope was that he would make contact and not strike out. Now they worry about me. One night playing third base, I found myself camped out under a major-league pop-up, a ball hit so high there seemed to be time to put sugar and cream into a cup of coffee, stir and drink it down before the ball would descend to Earth again. I staggered around in a desperate little dance, stuck out my glove and managed to catch it. The shortstop called over, for my ears alone, "Good catch, Dad"; the old backyard relationship had reversed.

The softball was played behind a school in Virginia in the foothills of the Blue Ridge Mountains. It is the kind of community in which, when a dog wanders onto the field and stops play, everybody knows the dog's name. Age is no object: one night the second baseman on my team was eight years old; the shortstop was at least six times that age. Young girls hit the ball to the infield; 20-year-old males routinely hit the ball beyond where the field suddenly slopes downhill.

Either kind of batter hears the same encouragement from teammates, especially when runners are on base. "There's ducks on the pond!" "Let's bring 'em around!" "A hit's a run!" Batters try to hit behind the runner (so it is more difficult for the defenders to put out the run-

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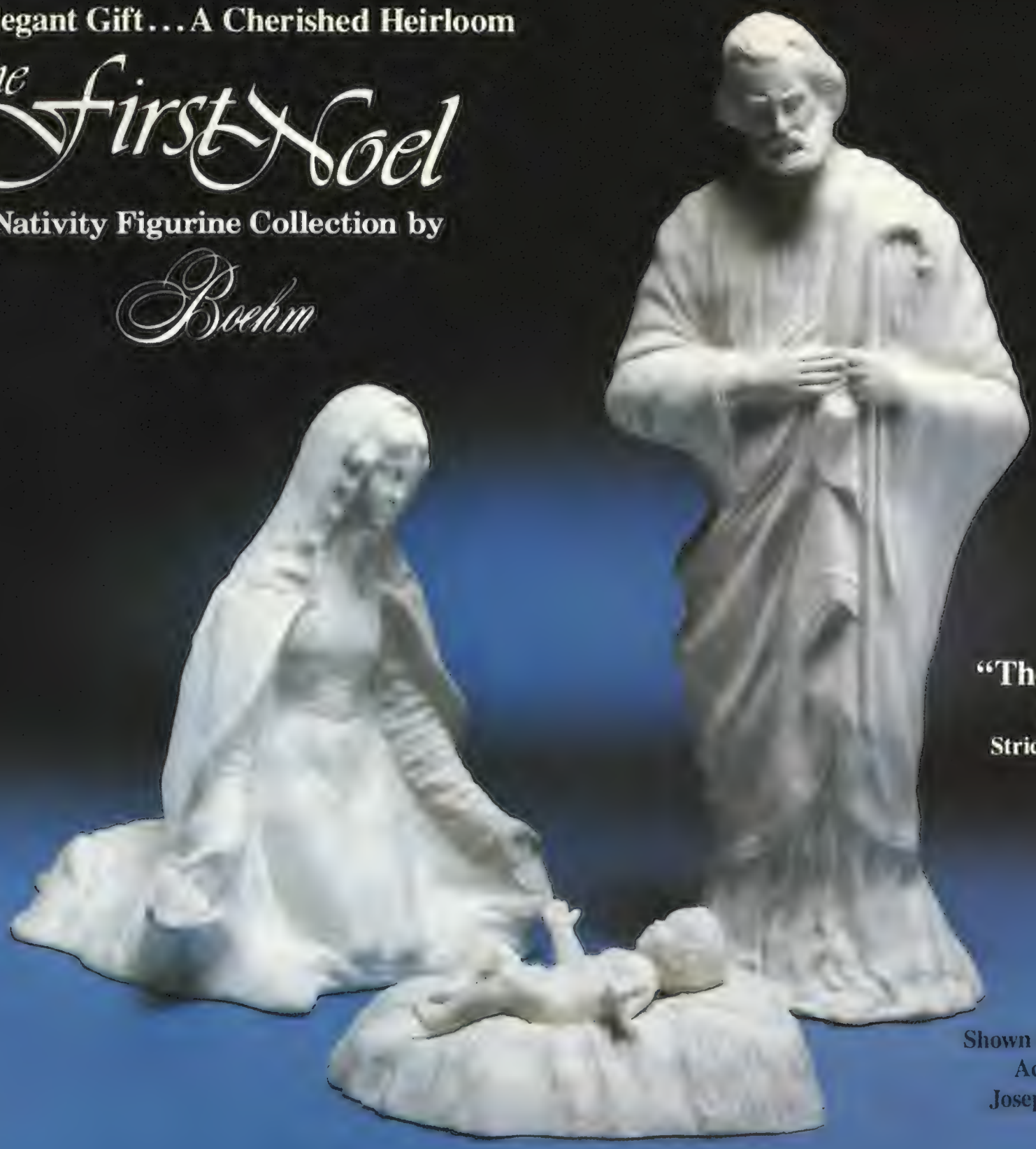

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ner most likely to score) just as they have been doing since before any of us were born. The fielders concentrate on that lead runner, too, with exactly the same strategy—if not the same execution—as their counterparts in the bigs.

One 95-degree Saturday I took my sons the ballplayers to watch the Baltimore Orioles try for a fourth straight win over the Chicago White Sox. I wanted to see again how the very best do the same things we try to do. And they are astonishing. The batters are so quick, the outfielders so fast. Even the routine plays amaze me. Someone hits a sharp ground ball, one that skips across the grass so hard I suspect I would leap out of the way. (I don't even think about standing in against a major-league pitcher.) The infielder whirls and lunges to his right, bends down to make a backhand stop with a suppleness forever beyond me, then makes the long throw back across the infield hard enough to catch the runner by half a step. The umpire hardly bothers to raise his thumb, the first baseman flips the ball back to the pitcher and everybody gets ready for the next batter as though nothing has happened. I'm awed. And I appreciate again the genius of the mind that decided first base should be 90 feet from home plate and not 88 or 92. The balance between batter and defense is just about perfect.

In the upper deck under the July sun, my vision blurs a little. These extraordinary players begin to look like the people I play with. Between pitches, infielders straighten up, standing idly, hands on hips. Outfielders kick at the grass as they look around the stadium, up at the sky. They are relaxing, like a heart between beats, and look bored to death.

When the pitcher winds up for his next offering, that apparent boredom is gone. Infielders crouch, ready to spring. Outfielders lean forward, ready to sprint. The concentration is so intense that the field itself seems stretched, taut, ready to spring. The next pitch is a ball, and everybody relaxes again, just standing around. Take away the manicured field, the uniforms, and they could be the gang at Rocky Hill.

My feelings blur, too. I'm rooting for the Orioles to win, but I'm also rooting for individual players to do well for their

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own sake. Over the years I have grown attached to certain players and root for them the way I did and do for my own children. When they come to the plate I hold my breath a little, and when they get a hit the pent-up hope comes out in a yell that has to do with more than winning the game.

The first baseman is one of the special people. Eddie Murray is a shy man who is a home-run threat every time he steps to the plate. But in the World Series last year he ran into a dry spell, just as he had in the Orioles' previous Series in 1979. Either he struck out or everything he hit was caught. Manfully he would trot back to the dugout, while millions watched his tormented face on television. There was no bat throwing, there were no tantrums with the umpires as the Philadelphia fans jeered him, mocking the Baltimore chant of "Ed-die, Ed-die." By the fifth game I was indeed holding my breath every time he came to bat, sitting rigid in my chair. In that game he hit a solo home run and I yelled and cheered and felt the tension drain. The next time up he hit a home run with a runner on base and I nearly broke the arms off my chair. The telephone rang. It was my oldest boy, one of the Rocky Hill gang, his voice cracking with excitement and happiness: "Did you see that? Did you see that?"

It is a long way from Eddie Murray to a pick-up ball game, and yet we are all doing the same thing. We stand at the plate with a bat in our hands and try to see the ball so well we can drive it over everybody's head. Infielders in shorts and sneakers crouch as the pitcher delivers, and if we don't cover as much ground as our big-league counterparts, it's not for lack of trying. When the ball is in the air, we are all equal in the sense that for a moment there is nothing else in the world. We swing at it, or we try to catch it. And if sometimes we drop the ball, our glasses fall off and everybody is safe all around—and the 12-year-old girl who has scampered happily into third says "thank you" because she thinks the ball was dropped on purpose—we know that soon the ball will be in the air again and we will have another shot at it. What more can you ask for?

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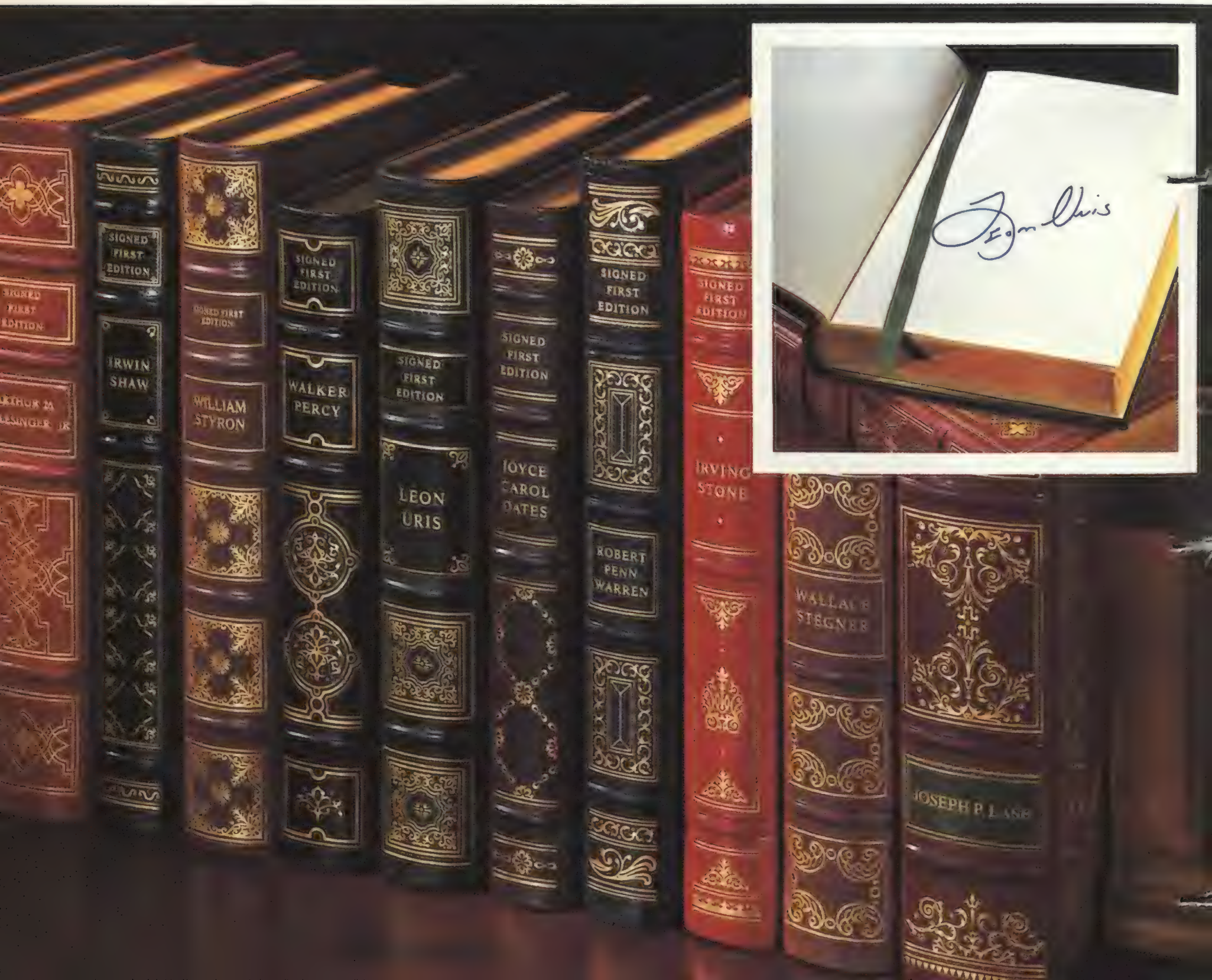

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In realms of royalty, childbirth is an affair of high politics, and sometimes matrimonial bliss

A royal birth is so much more than a blessed event. You and I have blessed events. But monarchs have always depended on their queens to bring forth new generations of kings. And their subjects have long celebrated those new babies not because they're cute, as babies will be, but because an heir always meant a smooth transfer of political power on to the next Age.

The lack of a royal heir often meant civil war, as contending factions jostled to control the throne. These days, of course, political stability is hardly dependent on the life of a royal infant. So when Diana, Princess of Wales, gives birth in a few weeks to a brother or sister for little Prince William, she will not be subjected to the customs and rituals that have attended royal births in the past.

Diana will be cared for by doctors in a modern hospital, not a specially decorated chamber in a palace. Moreover, privacy will be the order of the day—as it was not in times when, to preserve the royal line in case of a stillbirth, a substitute baby might be presented to the public. It was the custom among early French queens to give birth outdoors under an oak tree. Princess Victoire, the daughter-in-law of the Sun King, Louis XIV, was forced to give birth in court while business went on as usual around her.

In his *Lives*, Plutarch tells the story of the great Spartan lawgiver Lycurgus, part of which is connected with a posthumous royal birth. It happened that the Lacedaemonian kingdom came under Lycurgus on the death of his brother, Polydectes. But when it became clear that his brother's wife was pregnant, he vowed to hand the government over to the child, which was the honorable thing to do. The wicked queen, however, had other ideas. She secretly proposed to Lycurgus that she abort the babe on the condition that Lycurgus marry her and declare her queen again.

Much as he hated this proposition, Lycurgus pretended to agree in order to buy time for the infant. He told her, though, that she needn't force a miscarriage and endanger her own health, for he would see to it that the child was "put out of the way" as soon as it was born. When the queen went into labor, he sent his own loyal watchers to her with instructions that they should snatch the babe as soon as it appeared.

Lycurgus was at dinner with the chief magistrates when his nephew was brought in. Exclaiming "A king is born unto you, O Men of Sparta!" he laid the tiny ruler on the throne. The child-king was then named Charilaus, or People's Joy, reflecting the popular surprise and delight at Lycurgus' selfless act.

Royal births through the ages have exhibited the same variety of customs, some of which may strike modern minds as downright barbarous. On the birth of the 7th Duke of Atholl, August 6, 1840, his Scots father, Lord Glenlyon, immediately went deerhunting and returned to smear some of the game blood on the helpless infant.

The greatest problem and challenge for royal dynasties has been infant mortality. The enduring royal houses of Europe have been those which were fertile and hardy. Britain, for example, was forced to invite the Hanovers from Germany to take its throne when not one heir had been produced by Queen Anne's 18 pregnancies (only five babies were born alive and they all died in childhood).

The birthing process was a danger to royal mothers as well. Puerperal fever, brought on by unclean delivery-room conditions, took most of them, including Henry VIII's Jane Seymour. As late as 1817, Princess Charlotte died in London after a stillbirth. A few months later, the attending physician, Sir Richard Croft—perhaps overcome by guilt and the public outcry over the loss of the nation's hope—committed suicide.

Of course, there were certain forms of relief for travailing royal mothers. Unfortunately, most of them were based on folk beliefs. It was commonly held that the pain could be transferred to another person through witchcraft. In Scotland, the Countess of Athole, who was lying-in at Edinburgh Castle near the similarly confined Mary,Queen of Scots, is reported to have cast her own birth pangs onto a waiting-woman in the queen's chamber.

Yet another theory held that whipping

In a 19th-century engraving Emperor Napoleon III shows imperial infant to delegation of Paris market women, a gesture to his working-class supporters.

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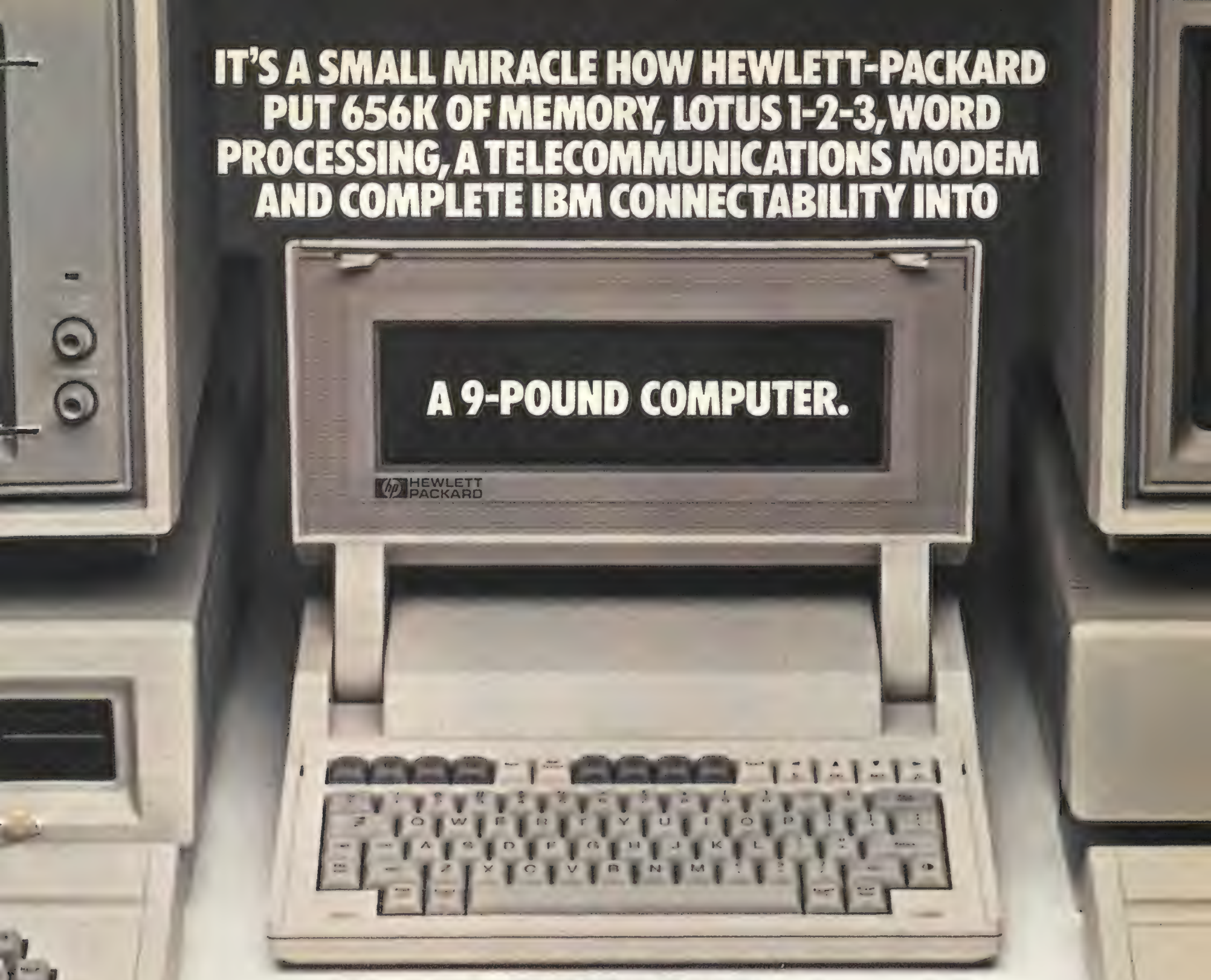

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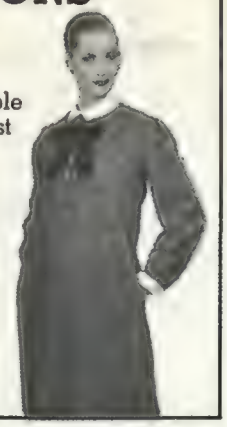
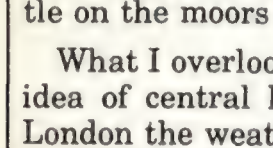


Thank Goodness for Flannel Sheets!

I Thought I'd "Freeze to Death"



When I went to England, I just knew it was going to be the trip of a lifetime. I had saved and planned for years. Then, out of the blue, I got a chance to spend a few days in an honest-to-goodness 13th Century castle on the moors in Yorkshire.

What I overlooked was the English idea of central heating. After I left London the weather suddenly turned shivering cold and wet. By the time I got to my destination I was too tired and miserable to care about picturesque charm and history. All I could think of was how uncomfortable I was going to be in an old, drafty castle.

Sure enough, my room was *freezing*. But when I crawled into bed I was dumbfounded to discover how marvelously cozy it was despite the lack of heat.

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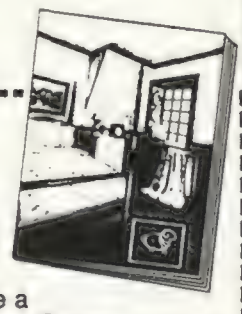

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the mother in labor would cause her to give birth quickly, the distress on one part of the body relieving the tension with which the infant was being held back. But when the Empress of Germany came to her labor, Martin Luther tells us, actually whipping her was unthinkable. Instead, two dozen men were brought to the lying-in chamber to be lashed. And two eventually died from the treatment they received there. Not surprisingly, this charade did little to improve the royal birth.

Fortunately, some remedies were more benign. In December 1502, Elizabeth of York, mother of Henry VIII, sent for a blessed girdle, a commonplace religious device worn by devout women in labor (a palace account shows she paid a monk six shillings eightpence for delivering it). As queen in Henry VII's court, Elizabeth was provided with an elaborately prepared lying-in chamber. Court instructions specified that the walls, ceiling and windows were to be covered with rich arras (tapestries), one window only to be left uncovered to admit light; further, the tapestry was not to depict any human figures, lest their gloomy stares frighten the queen. The floors were to be covered with carpets "over and over," and the furniture was to consist of a canopied bed and a cupboard, also covered in arras.

Historical accounts say the queen stayed in that room from November 1 to November 29, 1489, before the birth of her daughter Margaret.

Perhaps the saddest tale of royal birth is that of Anne Boleyn. Henry VIII was so proud of her that he paid her the highest royal compliment by making her queen, and combining her crowned "A" with his crowned "H" on coins at the royal mint. Unfortunately, on September 7, 1553, Anne brought forth a princess, which angered the king greatly.

But there is an arc of coincidence about this royal birth that leaps off the written page. First, it took place in the "chamber of the virgins," a room in the old Greenwich palace so called because it was decorated with tapestry depicting the Biblical wise and foolish virgins. Making light of a very dangerous situation, Anne is reported to have observed that henceforth the world could literally call the room "the chamber of virgins" because now a virgin was born in it on the vigil of the feast of the Virgin Mary (September 8).

As everyone now knows, that particular virgin, Elizabeth I, went on to become one of the greatest queens (and virgins) in history.

To my mind, the literary high note of concern for a royal birth occurs in an anonymous 1723 poem that addresses the unborn babe of a Princess of Wales (later Queen Caroline, consort of George II). Its ten bright lines open by urging the child to hurry: "Promised blessing of the year,/ Fairest blossom of the Spring./ Thy fond mother's wish—appear!" It then continues with a catalog of the springtime: "Haste to hear the linnets sing,/ Haste to breathe the vernal air,/ Come to see the primrose blow;/ Nature doth her lap prepare,/ Nature thinks thy coming slow!" The fetal object of all this versifying stirred himself to appear at the end of February, thereby fulfilling the hope of the poem's concluding couplet: "Glad the people, quickly smile,/ Darling native of our isle."

On balance, with the singular exception of poetry, we can say that matters have greatly improved for royal births.
Michael Olmert

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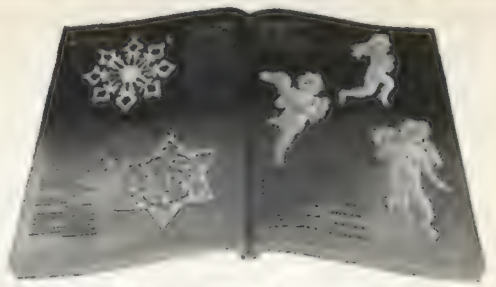

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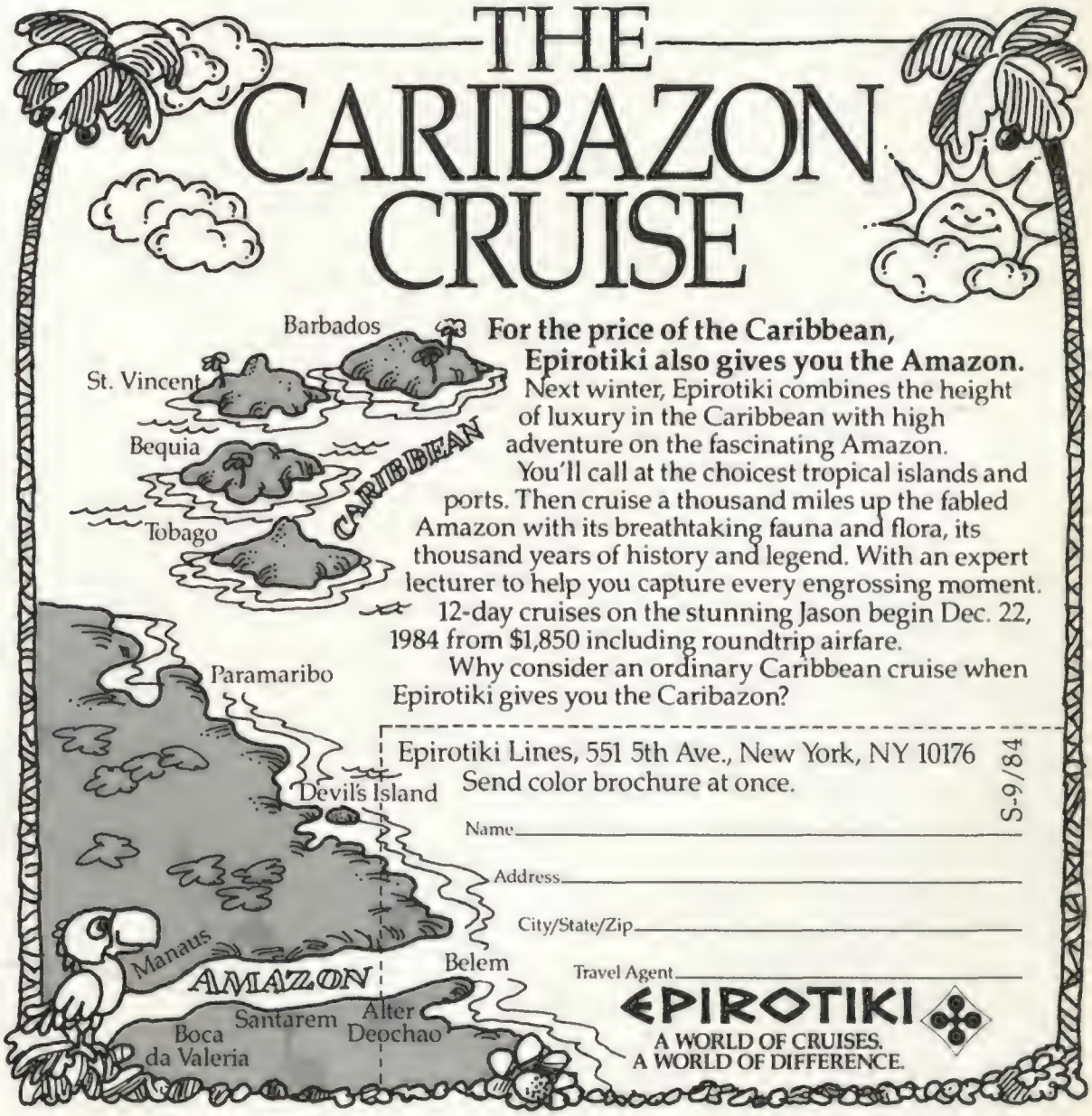

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By Herbert L. Kessler

Mosaics of San Marco

After many years of effort, the masterworks in Venice's great church have been revealed in all their splendor

Tapestries of stone, glass and gold, mosaics should by rights be eternal and the forms and faces brocaded in minerals everlasting. In the historic Venetian church of San Marco, however, restless foundations footed in watery soil and damp corrupting air have weakened the gemlike stuff of these fabulous fabrics. For 800 years, tesserae—the tiny cubes of which mosaics are constructed—have come loose from their plaster setting beds and have showered onto San Marco's marble floor nearly 90 feet below. In Venice, then, the eternity of mosaic is a perpetual revolution, a process that needed restarting before it was ever completed. A major event in that revolution has just taken place with the completion of a monumental conservation program and the publication of a long-awaited book. The book's illustrations, like those reproduced here, show the mosaics close up and in detail, as they have never been seen by visitors through the ages looking at them from far below.

The story began before the year 1100 when Greek artists traversed the Adriatic to decorate the new state church of Venice. Trained in the art of mosaic in Constantinople, capital of the Byzantine empire, these masters were sought for a special gift: mastery of the Byzantine style. The great church of Venice was to be adorned with a sumptuousness that surpassed that of its model in the imperial city.

Together with local craftsmen recruited to swell their ranks and learn their arcane art, the Greek mosaicists first assembled raw materials: chunks of marble and rock to be hewn into pieces the size of dice; cubes of luminous glass made according to secret formulae by Venetian glassmakers—ancestors of those same artisans who today spin vitreous confections for tourists on the island of Murano; and tiny sandwiches of glass and gold, the two bonded so that each material might impart to the other an added measure of radiance. Finally, the Greek masters and their assistants had sufficient materials amassed to begin the task of paving the interior cosmos of San Marco's domes.

Coarse plaster laden with straw was troweled onto the wall and over it; a smoother coat was spread in areas just large enough to finish before the bed hardened. Designs from carefully prepared cartoons were transferred onto the wet surface and then, finally, the master mosaicists worked their magic, creating flesh, cloth and feathers from stone and precious metals, and torrents of rain, smoke and sky from marble and glass. In some passages, they used subtle tonalities to produce a subdued effect; elsewhere, they animated

Franz Richter

The 900-year-old church is bathed with brightness and color after its most recent conservation effort.

Below atrium cupola of the huge church, an early 13th-century cherub glows gold, scarlet and emerald.

Photographs by Ekkehard Ritter

Skinlike tissue of scintillating tiny stones lines an atrium cupola, 20 feet in diameter and 25 above the floor. Dating from 1255-60, the splendid work retells in minute detail the story of Joseph's sojourn in Egypt.

the surfaces with splashes of yellow, red, green. Throughout their comprehensive program of decoration, however, artistry and technical virtuosity knit an infinitely complex design into a cohesive whole.

Even before the scaffolds that supported these first artists were dismantled, mending began; it has never ceased. Earthquakes and fires during the 12th, 13th and 14th centuries shattered the mosaic crust and returned the craftsmen to the domes to make repairs. In the 16th century, the task of renewing fell to Venice's leading artists such as Titian and Tintoretto, who replaced old-fashioned medieval images with creations of their own. Later restorations were often slipshod. Sometimes originals were simply removed altogether and replaced with poor copies; in the worst times, artisans resorted to clumsy trompe l'oeil, and plaster patches with painted "tesserae" were substituted for genuine mosaic.

Scientific restoration of San Marco began little more than a century ago, too late to restore the full brilliance of the great work but sufficient to slow the erosion. Engineers developed techniques for removing intact sections of mosaic and reinforcing the wall behind them, or even for taking apart the supporting wall from behind so that the rotted plaster bed could be replaced without damaging the mosaic's surface.

It was a much-darned tapestry, then, that Otto Demus found when he began research for his doctoral dissertation on the San Marco mosaics 60 years ago. To view his subject stretched out in the murky vaults high above his head, the young Austrian scholar clambered where he could, glimpsing enough to complete his thesis and to publish a monograph. Barely 100 pages long, that book was illustrated modestly with 50 black-and-white figures. Even then, though, Demus knew that to write a truly comprehensive history of Europe's greatest ensemble of mosaics, he would have to examine the fabric up close, unravel in his mind its alien patches and reweave where no thread remained. Half a century in the making, a new work, *The Mosaics of San Marco in Venice*, just published by the University of Chicago Press, at last discloses the mosaics' splendor and traces their genealogy. A noble artifact itself, the four-volume set outdazzles its predecessor with 900 pages of text and more than 1,000 illustrations, 162 of them in color.

The scale and difficulty turned the making of the book into a lifework. So did entirely mundane—even ugly—events, which more than once called the courtly scholar from his desk. Self-imposed exile from Nazi-dominated Vienna brought Demus to Great Britain; and though the Allied war effort, not art history, occupied much of his attention, it was there that he perfected the elegant English that flavors his book. After the war, Demus resumed his position at the University of Vienna and, at the same time, set about helping to restore the medieval monuments of his ravaged homeland. The technical expertise this later work provided served him well when he returned to San Marco, now with the support of a remarkable American research institution.

Dumbarton Oaks in Washington, D.C. (SMITHSONIAN, May 1981), had offered Otto Demus many years' hospitality in its library, allowing him to investigate San Marco's history. During the 1970s, Dumbarton Oaks initiated efforts to clean, study and photograph the medieval mosaics there. Aided by generous grants from the National Endowment for the Humanities, the Harvard-owned Dumbarton Oaks Center for Byzantine Studies assembled a team of scholars led by Otto Demus.

A lofty dose of soap and water

Once again, scaffolds rose in San Marco, this time not for artists but instead for a determined scholar and a handful of devoted colleagues to scrutinize their subject closely. Towers of iron and bridgeworks of wood reached high into the arches; wooden catwalks rested precariously on moldings and sills. As they have countless times before, workmen moved up and down in the vaults. From 1974 to 1979, though, they carried not trays of glittering tesserae and troughs of plaster but cameras, electrical equipment and warm, soapy water for cleaning the mosaics.

The team worked under pressure and with exquisite caution. Sections of mosaics, the scholarly crew discovered, had pulled free from their backing and were hanging on their own weight; some were so fragile they could not even be washed.

The job was completed in eight industrious campaigns. Gradually, painstakingly, the Dumbarton Oaks team laid bare its subject. Under powerful floodlights it emerged: simply the richest, most beautiful mosaics in the world, a museum of medieval art, the newly-brilliant cosmic tapestry peopled with hundreds of figures—Adam and Eve, Noah and his progeny, Isaiah, Christ, St. Mark, of course, and the other holy men of Venice, bathed in a celestial glow of gold.

At last, Demus could see with his eyes what he had deduced in six decades of scholarship. White-haired now, but still agile, San Marco's most assiduous student sorted out each stage in the gestation of the beloved church—the handiwork of Greek artists, the contributions of local mosaicists and myriad repairs from later reworkings. Finally, Demus was ready to write his book, to share with us his privileged view.

Herbert L. Kessler is Charlotte Bloomberg Professor in the School of Arts and Sciences at Johns Hopkins.

Dizzying scaffolding, upper left, stands as evidence of immense effort required to get at, clean and study San Marco's medieval mosaic marvels. Detail at left is the face of Eve, part of figure in red, directly above.

The west vault soars nearly 70 feet in the air; beyond it, central dome of the church reaches even higher. The vault design shows the Passion and Resurrection of Christ; dome shows Ascension, ringed by the Virgin, angels, Apostles and beatitudes and virtues. From this vantage point viewers, facing the main altar and looking up, have seen the story of Christ, its elements appropriately juxtaposed, since the late 12th century.

Atrium mosaics abound in fish, fowl and mythic creatures. Above, parakeets, chickens, ducks illustrate the Noah story. Inscription refers to taking male and female animals, clean and unclean according to Old Testament law, aboard the Ark: the unclean in pairs, the clean in clusters. Detail, opposite top, includes a clumsy repair (area of darkest water, crudely drawn crab, dark-blue lower parts of birds) made long ago.

Sea monster, in detail, is medieval artist's version of a whale, read about but never seen. At right is a pair of elegant cranes—a beautifully realized decorative work of art, but atypically unrelated to Biblical text.

Shedding light on San Marco's mosaics

Close-ups emphasize contrasting styles at San Marco. Below, expressionistic, colorful heads of Judas' henchmen from the Betrayal of Christ embellish west vault and date from the 1180s or '90s. At right, flat, elongated, highly stylized Paul the Hermit, dressed in his traditional garment of plaited palm leaves, was done circa 1230. Opposite, in somber colors and more naturalistic modeling, sleep five of the Apostles in a detail from the Agony in the Garden of Gethsemane, which dates from about 1215. These figures, full of emotional impact and in finest condition, are part of a wall mosaic, outstanding in design, that measures about 39 by 13 feet; it is one of the largest flat mosaics in Byzantine art covered by a unified composition.

The master mosaicists at San Marco gave their most careful attention to heads. At right, detail from one of a row of figures in the great central dome, is the face of Misericordia (Mercy), one of the Biblical virtues. The couple below are part of a panel showing Noah, his family and animals leaving the Ark. Opposite, on south wall of the church's west arm, appears Christ's head, another detail from the Agony in the Garden. The craftsmen who created such masterpieces high in the cathedral knew that the viewers below would never see the mosaics in their radiant detail. They worked, it has been said, for the eyes of God.

Don't badmouth the channel catfish, above, and its clan. Many cats taste fine and can be raised in ponds.

By John Madson

To catch this fish, put hand in mouth, hang on—and pull

It's called 'noodling' and it's practiced on the Mississippi, but there is a much easier way to obtain catfish—it is called 'farming'

Where I live out here on the Upper Mississippi, the local French name for the flathead catfish is "goujon." An awesome creature, the goujon has a heavy head, tiny eyes and several pairs of the fleshy whiskers that give the catfish its name. Its rubbery skin is a mottled, yellow-brown color. Unlike some other catfish that are content to scavenge for much of their food, this one is said to be primarily a meat eater that prefers living prey. Big ones, and the goujon may reach 100 pounds or more, are usually loners. They hang out in deep holes under log drifts or cutbanks—lurking there during the day and prowling into shallows at night to hunt other fish.

A Mississippi fisherman lifting his trotline—a long line hung with baited hooks—may feel a deep, heavy surge. He pulls the boat along the line, cutting off hooks as he goes, for it is not well to be snagged on a trotline with a 70-pound goujon. Slowly, carefully, he raises the heavy line. A broad, unspeakably ugly head breaks the surface. The huge fish is not hooked, however. It is simply holding a channel catfish that was hooked, as a dog holds a bone. Man and goujon ex-

Aquaculture is said to be the wave of the future for producing food, and catfish farming is in forefront.

change a long look and then the giant releases the smaller fish and sinks out of sight—leaving the fisherman with a three-pound channel cat whose skin has been deftly stripped away.

Spectacular though it may be, the goujon is not particularly unusual as catfish go. There are groups of bigger fish and littler fish, stranger fish, more beautiful fish and even uglier fish. But in no other group of fish does so much beauty and ugliness come together as in the catfish clan. Altogether it comprises more than 2,000 species. Many of them are considered quite good to eat and that's part of the reason why my neighbors and I have spent so much time and energy over the years trying to catch them.

Nowadays, however, there is a more reliable way to obtain catfish meat. Instead of catching the fish, some 400 entrepreneurs in Mississippi and hundreds of others elsewhere in the Deep South are *growing* them —on farms. Last year, U.S. catfish farms sent an estimated 138 million pounds of fish to market—38 percent more than the year before. "The business is growing tremendously," says Florida aquaculture expert Dr. John Ryther. At the Catfish Farmers of America, a trade association headquartered in Jackson, Mississippi, staff members think the potential is unlimited. "Aquaculture is the wave of the future," says Mary Kelly, "and catfish farming is on the leading edge of it."

Most catfish grown on farms weigh only a couple of pounds or less. That hardly compares with the heavyweight champion catfish of North America, the blue, which is sometimes called a "fulton" or "blue fulton" along the Mississippi. This was surely the kind of catfish that Mark Twain reported as weighing 250 pounds —although fish always grow bigger in the pilothouses of riverboats than in the Mississippi itself. Over on the Missouri River, the late "Steamboat Bill" Heckman, an old river pilot, told of a 315-pound catfish taken "just after the Civil War," and said that catfish weighing up to 200 pounds were commonly caught from the Big Muddy during that period. Such huge catfish, however, always seem to escape official documentation.

One of the biggest on actual record is a 150-pound blue cat received by the Smithsonian's National Museum in November 1879 from Dr. J. G. W. Steedman,

Hundreds of young catfish poured into a tank on farm start a two-year journey toward the dining table.

Near journey's end, catfish are gathered in net at a Mississippi farm and removed by crane basket.

chairman of the Missouri Fish Commission. The good doctor had bought the catfish in a fish market and in a letter to the U.S. Commissioner of Fish and Fisheries, Professor Spencer F. Baird (who was also the second Secretary of the Institution), Dr. Steedman noted: "Your letter requesting the shipment to you of a large Mississippi Catfish was received this morning. Upon visiting our market this P.M. I luckily found two—one of 144 lbs., the other 150 lbs. The latter I ship to you to-night by express."

One of the early common names for these behemoths was "Mississippi catfish" because they are so partial to that river. They also tend to be southerly fish and are far more common in the Lower Mississippi than in the upper reaches.

The blue cat is a far more attractive creature than the flathead. A pale bluish-silver or light gunmetal in color, it is a well-favored fish, especially the smaller specimens, trim and streamlined from the deeply forked tail to modestly flattened head. The esthetics don't extend to diet, though. Like the uglier flathead, which seems to prefer living prey, the blue cat will eat a variety of aquatic creatures—from fish, insects and crayfish to clams and mussels.

Big as it is, our great Mississippi cat is a middling fish compared to the huge sheatfish, or wels, of Eurasia. This hulking, voracious giant lives in various lakes and rivers in eastern Europe and western Asia. Individuals nearly 15 feet long and some weighing more than 600 pounds have been reported.

The wels is an odd-looking creature, even for a catfish, with the dorsal fin reduced to a tiny flag just behind the head and the extremely long anal fin almost merging with the caudal fin to give the fish an eel-like appearance: Like our flathead catfish, the wels is given to long periods of contemplation under overhanging banks or logs, a lethargic fish much of the time until it is triggered by prey. The largest welses are evidently capable, from the standpoint of both size and temperament, of attacking and eating almost anything else that might swim in their waters, and their eating habits are part of European folklore. There is at least one story of a small child being swallowed whole by a large wels, and the fish are said to devour birds swimming at the surface.

Any large, strong fish may have some dangerous potential if it clouds the good sense of the fisherman, as large fish often do. In the catfish waters of mid-America there's a homely practice called "noodling" in which the wading fisherman gropes under logs, driftwood piles and into deep holes in riverbanks that

John Madson is completing a book about the Upper Mississippi. He is the author of Where the Sky Began, *which Houghton Mifflin published in 1982.*

may be inhabited by large, grumpy, solitary catfish. The fisherman searches in such places until he touches a big goujon or blue, then carefully runs his hand into the fish's great mouth and hauls it out of its lair.

This practice, illegal in a number of states, has never done much for me. I've grabbed things that bite and sting, but the prospect of blindly groping back into those tangled haunts of great, sullen fish, snapping turtles and water snakes isn't an appealing one. There are persistent tales up and down the Mississippi of men having their arms broken while noodling big flatheads, or of being dragged back under a driftwood jam and held there and drowned. Apocryphal accounts, almost certainly, but thrusting one's arm into the maw of a 50-pound catfish could cause some confusion in the matter of who'd caught whom. The last such report I've heard concerned a man gigging fish with a spear around the edge of a Kansas reservoir. Late in the day, or perhaps at night, he had come across a very large flathead in shallow water. He had tied the end of the spear's line around his waist and then speared the fish—one basic mistake soon compounded by another. As the story goes, they found the drowned man still roped to the dead catfish—a latter-day Captain Ahab and Moby Dick.

High voltage and other nasty shocks

Africa's electric catfish, a big, aggressive fish that may weigh more than 50 pounds, packs a punch of up to 800 volts. But the most fearsome reputation belongs to a tiny South American catfish. Included in the family *Trichomycteridae* are some parasitic catfish, which swim into gill chambers of larger fish, attack sensitive gill filaments and feed on blood. Among these species is a tiny candiru that inhabits streams and rivers in the Amazon basin. Usually less than two inches long, it is not regarded as a human parasite—at least not in the sense that it deliberately seeks out a host. But if a naked bather enters its natural habitat, it is said, the tiny catfish may swim into the unlucky person's urethra. The fish's dorsal fin is soft-rayed but its gill covers have spines. When the covers are flared, the spines engage and the tiny fish is anchored firmly in place. The pain is agonizing, and surgery may be the only recourse.

Catfish in this country are not as dangerous as that, but some of them are venomous. Native species have a strong, sharp spine at the front of the dorsal fin, and a similar spine at the front of each pectoral fin. These spines are often serrate, needle-sharp, and can be covered with an irritating substance. Alarmed catfish can lock spines in erect positions by setting them in their sockets. In a lifetime of catching, handling and cleaning bullheads ("horned pouts" in the East) and channel catfish I have been "horned" or "spined" many times and it always hurts. I yelp, explete an expletive or two, and soon forget about it.

Even the little madtoms, including the stonecat, can be nasty. When you are horned by one of them, poison quickly finds its way into the wound. The effect of being horned by a madtom varies. At its least, it probably is like a stout beesting. At worst, it's an almost electric jolt that produces a dull, throbbing ache that may last for hours. I like to think I have a charitable attitude toward many critters that are regarded as unsavory. Things like skunks, eels, most snakes, ticks and leeches. But there are two I don't like and never shall, and I make no bones about it—common water snakes and madtoms. They have hurt me too often, and the fact that it is always my fault doesn't change things. Maybe I take madtoms more seriously than their size might seem to warrant, but I'm not alone in that. Some of the professional divers on our Midwestern rivers who gather commercial shellfish don't relish having any contact with these secretive, bottom-hugging madtoms.

The single pectoral and dorsal spines are typical catfish features, as are the several pairs of sensory barbels around a catfish's mouth. Many catfish also have the fleshy adipose fin that is between the dorsal and the tail, or caudal fin. Some of these features may be absent in some catfish but there is one characteristic that they all have in common: no catfish has scales. There are those with naked skins, others with rows of spiny plates, and even a few completely armored with overlapping shields. But no scales.

Farming cats may be in fashion, but fishing for them is still more fun, as this Mississippi angler well knows.

Albino walking catfish
Armored catfish
Stonecat
Wels
Tadpole madtom
Brown bullhead
Spotted bullhead
Channel catfish
Flathead catfish

South America, as you might expect, has a rich variety of catfish fauna, including the armored cats, redtail cats (p. 61) and such gorgeous little ornamentals as the bronze, black-spotted, leopard, peppered and skunk corydoras. From Africa comes a little backswimmer that starts out with the conventional dark back and light belly but takes to swimming upside down as it grows and ends up with a belly-colored back and back-colored belly. And from the Indian and Pacific Oceans comes the highly venomous striped catfish (p. 61). For years, large numbers of such strongly patterned, colored and even albino catfish have been imported for hobbyists. One of these, brought into Florida, was a moderate-size albino catfish from Southeast Asia. Placed in outdoor holding tanks and ponds, this fish did something extraordinary. It simply left the ponds and walked away.

It was a catfish of the family *Clariidae*, able to breathe air and to slither its way across land. These "walking catfish" can stay out of water for hours. Moving overland and swimming up waterways, they have spread through most of the southern half of Florida. A bad reputation has spread with them—accounts of dogs and other pets being attacked and of valuable native game fishes being displaced. Many of the horror stories have been groundless, of course.

Biologist Paul Shafland, at the Boca Raton laboratory of Florida's Game and Fresh Water Fish Commission, is in charge of investigations of exotic fish that have been released in Florida waters. I asked him if the walking catfish is as bad as its popular reputation. Does it endanger native game fish? "From what we know," Shafland replied, "it doesn't pose as serious a threat to Florida's largemouth bass as was feared. It's competing with our native fish, sure. But we don't have evidence that it's the terrible threat to Florida waters that some of the press has thought."

He paused a moment, and added: "Still, the walking catfish is an established, highly successful exotic species in southern Florida—and any successful exotic means that the energy flow through a native ecosystem has been altered in some way. Diverted, changed, diluted, something. This fish could be doing some subtle damage that we won't understand for years."

So much for the uglier, more dangerous and ill-favored of the catfish tribe. We come at last into the majestic presence of the regal channel catfish, *Icta-*

More than 2,000 species distributed throughout the world make up the disparate catfish clan. Several of them are shown in this artist's sampling. They range in size from the giant wels, that may weigh in at 600 pounds, to the three-inch-long tadpole madtom.

Illustration by Norman Adams

lurus punctatus, also known as the prairie trout or the fantastic fiddler, a trim, sagacious, freckle-flanked, clean-lined, fork-tailed wonder of a fish, and one of the best of all reasons for being a prairie kid with school just out and a shade-dappled creek close by. I call this the king cat. It resembles a small blue catfish but, unlike the fulton, the young channel cat has spots and flecks along its sides. The back is olive-brown or slaty blue tending into the silvery belly. The tail is deeply forked; the body graceful and strong. It is middle-size, as catfish go. I've never seen a channel catfish more than 16 pounds nor hooked one that weighed more than ten. The pole-and-line record is a 58-pound giant taken in a South Carolina reservoir, but comparing such a catfish with those in spring-fed, gravel-

As North American catfish go, black bullheads are on the small side and can survive in waters that other fish can't tolerate. But they are relatively easy to catch and, properly prepared, taste delicious.

paved little rivers is like comparing a sumo wrestler with a world-class miler.

Channel catfish are simply that: catfish of the channels. They like moving water. I have also caught them in rocky Quebec lakes while fishing for pike and brook trout, and in spring-fed Ozark creeks we catch equal numbers of channel catfish together with the lordly smallmouth bass.

Channel cats eat just about everything

A scavenger as well as a predator, the channel cat is an omnivorous feeder that can find food by sight, and touch and taste with its fleshy barbels. The scope of its diet is infinite. With pole and line I have caught channel catfish on hooks baited with live minnows, frogs, grasshoppers, crickets, angleworms, crayfish, salamanders, fresh and sour chicken innards, cut bait, mussel meats, horse leeches, Ivory soap, doughballs, cheese; and with artificial lures including streamer flies, spoons, spinners, jigs and deep-running plugs. In addition to nearly every sort of critter that lives in a stream, the truly hungry channel cat may also accept such diverse bankside offerings as wild grapes, elm seeds and other stuff that drops into the water.

Admittedly, some of the channel cat's dietary items are a little rank. For years, one of my favorite catfish baits was a commercial concoction called, as I remember, LineBuster, a doughy abomination whose prime ingredient was undoubtedly very bad cheese. It was so bad it was beautiful, and had many diabolical uses—a bit of LineBuster smeared on the inside of a friend's hatband in hot weather, for example, or a dab or two on the exhaust manifold of the game warden's car. Verily, an unguent for all seasons.

Channel cats can be strong, gamy fighters. If anything, though, the joy of catching a May catfish in a bright gravel riffle is transcended by the ineffable joy of eating same. It has a firm, rich, sweet flesh that has few equals among freshwater fish. Now, I happen to be an ardent fisher of trout. I admire the gallantry and uncompromising standards of wild trout, and applaud their choice of country. I am honored to join them in contest and, now and then, to eat them. And if they don't fry up quite as well as prime channel cats, we must be charitable, for that's a lot to ask of any fish.

This table quality, combined with the channel cat's hardiness and thriftiness in converting food to flesh, has made it a natural for commercial fish farming. The heart of the industry is along the Mississippi, on the broad, flat floodplain between Memphis and Vicksburg, where more than 50,000 water acres of catfish farms are now in production.

We stopped by the little Mississippi town of Anguilla one heavy August day to visit Mr. Billy Mc-

Called "striped catfish," these marine creatures can inflict extremely painful wounds with their spines.

South America is a catfish kingdom. Appropriately named redtail, or *pirarara*, lives in Amazonian regions.

Popular as an aquarium pet, the glass catfish is native to Southeast Asia. Its internal organs are visible.

Kinney—banker, civic leader, catfish farmer and, in his words, "an old sharecropper." There in his handsome, high-ceilinged office—part of a remodelled section of his grandfather's old general store—he spoke of catfish. "In 1965 I happened to read a magazine article on the subject," he said. "At the time I didn't know of anyone else in these parts who was in the catfish business. But one day I got talking with friends over coffee and, well, I just decided to get into it."

A successful farmer and chairman of the Bank of Anguilla, Billy McKinney isn't the sort given to snap judgments or highly speculative enterprises. Yet the catfish game looked like a good one then—and time has confirmed his judgment. We drove out to McKinney's catfish farm, a series of 29 rectangular ponds totalling roughly 360 water acres fed by six freshwater wells. A production pond may hold up to 8,000 pounds of fish whose efficiency in utilizing food is amazing. Catfish fry will double their weight each week for five or six weeks, and each pound of finished catfish costs only about 1.7 pounds of feed, which is better than hogs can do, and four times as efficient as some cattle. The best time to sell is when the fish is under two years of age and weighs about 1½ pounds; above that, their value is likely to decline because production cost increases. During a year of partial harvests, some 4,000 pounds of catfish are usually taken per production acre and shipped alive in water to a processor, where the fish are stunned with electricity and dressed. A dressed catfish brings about $2 per pound.

Catfish farming, like any other kind of farming, has its hazards. In the past, fish production has outstripped market outlets and some producers were hurt until the slack was taken up. Diving beetles and other predaceous insects can decimate the fish fry, and oxygen in the ponds must be monitored constantly to avoid a catastrophic depletion. There has been competition from Brazilian catfish, too; millions of pounds are being imported each year and continue to be sold well under the price of homegrown catfish. "*And* they're pretty darned good eating, too," admitted Billy McKinney.

"I've never eaten any farm catfish," I said. "How do they compare with wild ones?"

"Some wild catfish taste musty," McKinney replied. "But these farm fish are bland, well-textured, sweet. Did you say you are heading downriver? To Vicksburg? Stop in at the Top O' The River restaurant there and see for yourself."

Several hours later, in what you might call empirical research, we were ensconced in the restaurant watching the sun set beyond the river, supping on catfish fillets, hushpuppies, pickled onions and hot cornbread all served on tin plates. It suited me just fine, but there was a certain English naval gentleman who wouldn't have been impressed. Captain Frederick Marryat visited America back in the 19th century and didn't think much of the country in general and the Mississippi River in particular, declaring that "It contains the coarsest and most uneatable of fish, such as the cat-fish and such genus. . . ." To which Mark Twain later responded: ". . . the catfish is a plenty good enough fish for anybody. . . ."

Mark wouldn't know his Mississippi today. The grand old sidewheelers are gone; the old flatboatmen are gone. And dams have been built all over the place. But some things never change. The catfish are as ugly as ever, and just as good.

Its wanderlust has given the walking catfish a bad name in Florida, where it has secured a firm foothold.

Since her native state is a world catfish center, Mississippian Anita Nick just *has* to eat some.

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By James S. Trefil

Odds are against your breaking that law of averages

Probabilities have had a bad name ever since they came out of the gambling dens of Paris, and yet much of our lives is governed by them

Something in the human spirit harbors a primeval mistrust of numbers. "Figures won't lie," said Civil War General and later Ohio Congressman Charles H. Grosvenor, "but liars will figure." Disraeli once warned his colleagues: "There are lies, there are damned lies, and there are statistics." Some years ago, a popular book carried the title, *How to Lie with Statistics*. What can it be about the use of statistics and the study of probability that produces this attitude?

Actually, the field has always been different from other areas of mathematics. For one thing, it was born in the study of games of chance—in a gambling den, if you will. There still clings to it a certain raffish air, a hint of decadence, that sets it off from its dowdier mathematical sisters like a traveling salesman at a church social. Students still pore over problems with picturesque names like "The Gambler's Ruin" and "The Chevalier's Dilemma." This is heady stuff in mathematics, where problem titles tend to run to dozens of polysyllabic (not to mention marginally unintelligible) words. Furthermore, by their very nature probability and statistics are concerned with situations where certain knowledge is impossible. After all, if we knew for sure what card was going to turn up next, we wouldn't have to use probability theory to work out odds.

Most historians date the study of the theory of chance occurrences from a day in 1654 when Antoine Gombaud, Chevalier de Méré, Sieur de Baussay, walked into a gaming room in Paris. In progress was a popular gambling diversion of the time, a game in which the player bet the house that he could roll a die four times in a row without getting a 6. If he did so, he collected his winnings; if a 6 came up, he lost. De Méré, and every other gambler in the room, knew that this game was stacked in favor of the house (we'll see why in a moment). But de Méré got to thinking about a slightly more complicated game: one involving two dice. What sort of game could you set up by betting that you could roll two dice a certain number of times without getting a double 6? The conventional gambling wisdom of the time said the break-even point was 24 throws: fewer than this would put the odds too heavily in favor of the gambler, greater than this would favor the house. De Méré thought the conventional wisdom wrong, and his calculations eventually involved such giants of French mathematics as Blaise Pascal and Pierre de Fermat. One of the first products of modern probability theory was the realization that the real break-even point for the double die game was 25 throws, not 24.

Perhaps the best way to begin to understand probability is to look at the single die game that got the good Chevalier started. An ordinary die has six sides, and providing that it hasn't been weighted or otherwise tampered with, it is just as likely to come up with one side showing as any other. In one roll, you are just as likely to get a 1 as a 2, a 5 as a 6, and so on. There are six possible outcomes of a single roll (corresponding to the six sides of the die), which means that the chance of any particular number coming up is one in six. Another way of saying this is that the probabil-

Life can seem a nightmare of random chances, but gamblers know that Lady Luck can sometimes smile.

Illustrations by John Huehnergarth

We don't know whether the Chevalier de Méré won a fortune or went broke from his study of chance.

ity that a particular number will come up on any throw is 1/6, or about 17 percent. Thus, a gambler in de Méré's salon in 1654 would have a probability of 1/6 of losing his money by throwing a 6 on his first try. Conversely, he would have a probability of 5/6, roughly 83 percent, of throwing any other number and staying in the game.

There is no reason why the second throw of the die should depend on what happened on the first throw. For example, if you got a 4 the first time, the probability of getting any number on the second throw would still be 1/6. Therefore, the probability that the gambler would still be in the game after two throws would be 5/6 (the probability of not getting a 6 on the first throw) multiplied by 5/6 (the probability of not getting a 6 on the second). It's not hard to see that the probability of not throwing a 6 in the four attempts is (5/6) x (5/6) x (5/6) x (5/6) = .48—that is, 48 percent. This means that if you play the game, there is a 48 percent probability that you will win and a 52 percent probability that the house will win. If, as in de Méré's day, the house bet a dollar for every dollar put up by the gambler, then in the long run the house would collect $4 of every $100 put up by its optimistic patrons.

A graduate student kept himself in beer by betting that a coin would come up heads three times in a row.

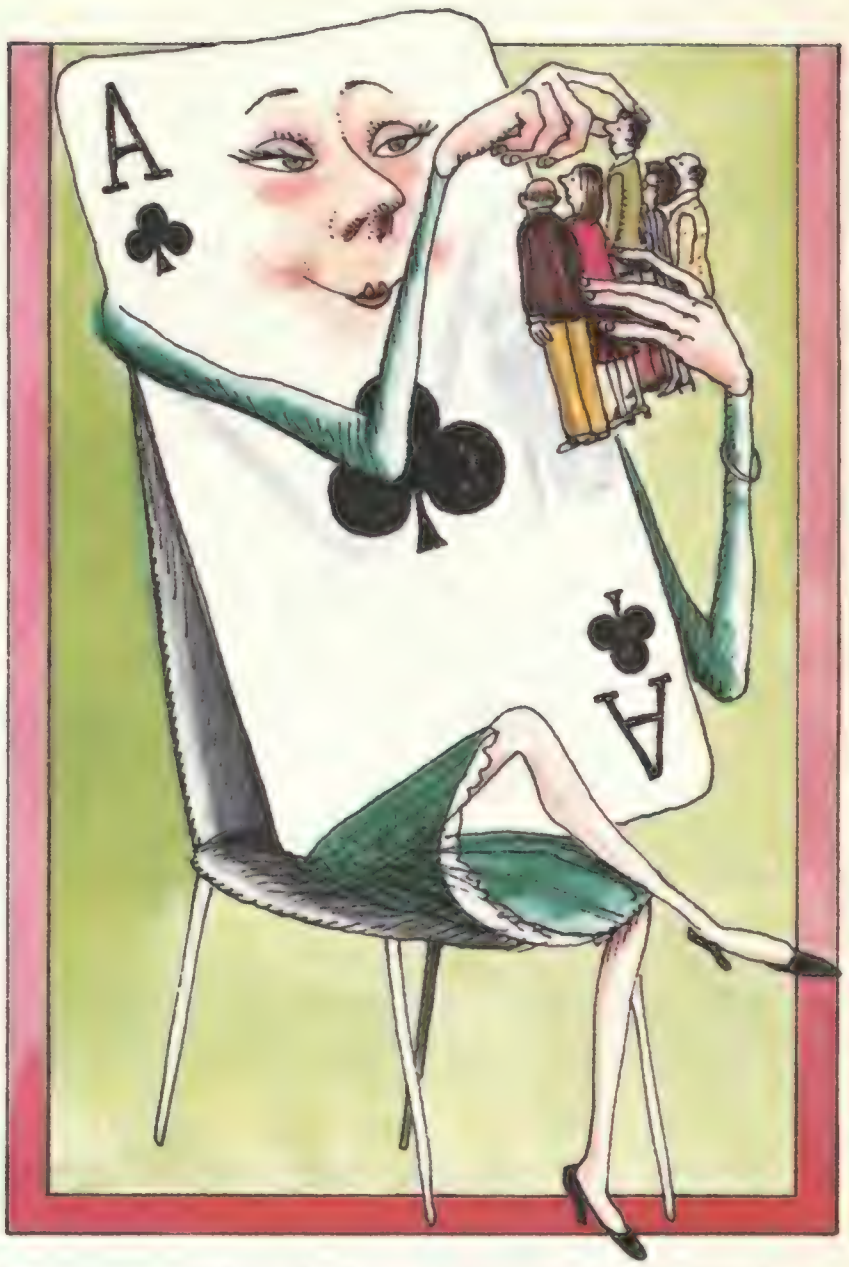
All games of chance are set up so that there is a slight imbalance of the odds in favor of the house. In roulette, for example, there are 36 numbered slots, alternately colored red and black, into which a ball can fall, plus—in America—two slots labeled 0 and 00. (There are several variations which could alter the following description slightly.) The betting system is a little complicated, but the bet with the highest chance of payoff is one in which you put your money on red or black. If the ball winds up in the correct color, the house pays you as much as you bet (i.e., the bet is "even money"). There are 18 red slots and 18 black slots on the wheel; so you might think that there was a probability of 18/36 or 50 percent that you would win the bet, but if you did you would be neglecting the "extra" slots on the wheel. If you bet red or black and the ball comes up in 0 or 00, you lose.

This means that you really have a probability of only 18/38—47 percent—of winning. Put another way, if you had $38 and bet $1 on red for 38 turns of the wheel, you would, on the average, find yourself with $36 at the end of play.

Besides teaching us a cautionary tale about games of chance, these examples illustrate two central ideas of probability. The first is simple: to find the probability that something will happen, you divide the number of ways you can be successful by the total number of ways that things can turn out. In the case of a die, for example, there is one way to get a 3 and six ways the die can turn up, so the probability of getting a 3 is 1/6. Similarly, there are two ways a coin can turn up, so the probability of getting heads is 1/2.

The second idea is a little more subtle, although it seems simple enough. It states that the probability of an independent event doesn't depend on what happened in the past. (Whether a coin will come up heads or tails is independent of what happened on the last toss. There are times, however, when the outcome of an event is dependent on what has already happened. If you try to pick the ace of spades from a deck of cards, for example, you have one chance in 52. If you discard the cards as you draw them, however, the odds of pulling the ace will improve with each round.) Your coin has a 50 percent probability of coming up heads on any toss, regardless of any previous throw. This principle holds even if the coin has just come up heads ten times in a row. I remember one engineering graduate student at Stanford who used to keep himself supplied with free beer by flipping a coin until it came up heads twice in a row and then offering two-to-one odds that it would come up heads on the next toss. He usually asked his victim to supply the coin so there would be no question of cheating, but this was just a psychological gambit. Because the probability of the coin coming up heads on the next toss is *always* 50 percent, he could expect to win half of his bets. If each bet was $1, then he would win $2 for every $1 he lost. This guy, at least, had found a practical use for his mathematics.

Of course, all of this kind of thinking depends on the assumption that the die or the coin or the roulette wheel is fair, and that there are no hidden mechanisms at work to affect the game unfairly. One of the most



Despite everything he knows about the probabilities, a gambler still hopes the right card will choose him.

Life insurance policies are based on averages; they say nothing about the life expectancy of an individual.

What are the odds that . . . ?

Even odds

Your next child will be a boy (1 in 1.96)
If there are 23 people in a room, two will have the same birthday (1 in 1.97)
A coin will come up heads (1 in 2)
A bridge hand (13 cards) will contain one ace (1 in 2.27)

Ten to one

You will be involved in a traffic accident this year (1 in 10)
Two cards drawn from a deck will be of the same suit (1 in 17)

A hundred to one

You will be audited by the IRS (1 in 60)
Your next childbirth will result in twins (1 in 98)
A coin will come up heads seven times in a row (1 in 128)

A thousand to one

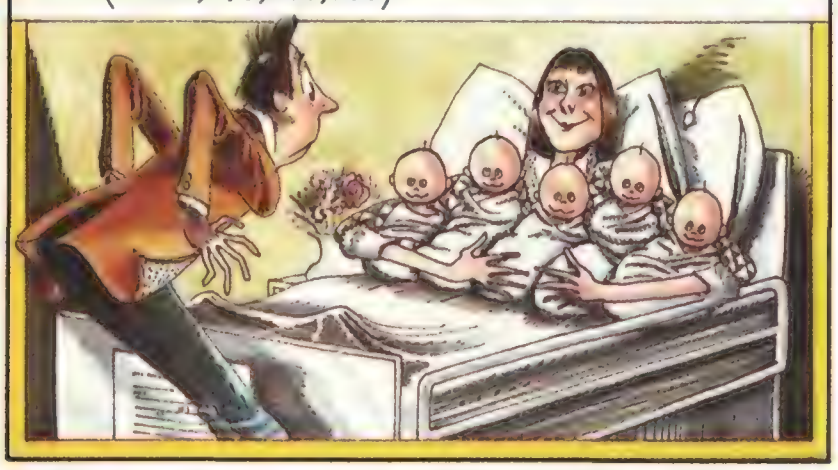
A bridge hand will contain four aces (1 in 333)
You will be dealt a flush (all cards of the same suit) in poker (1 in 509)
A coin will come up heads ten times in a row (1 in 1,024)
Your next childbirth will be triplets (1 in 2,700)

A million to one

Your next childbirth will be quintuplets (1 in 241,000)
You will get hit by lightning (1 in 2,000,000)

A billion to one

You will be killed in an airline accident (.9 in 1,000,000,000 per mile flown)
A golf ball will land on a specified blade of grass on the fairway (1 in 1,000,000,000)
A coin will come up heads 30 times in a row (1 in 1,073,000,000)



striking examples of what can happen when this assumption is violated occurs in the movie *Casablanca*, where Humphrey Bogart, in the role of Rick Blaine, decides to help a young Bulgarian win enough money at roulette to pay the standard bribe for an exit visa. Coming up behind the fellow at the roulette table, Bogey tells him to try playing number 22, whereupon the number 22 comes up twice in a row. You now know enough to calculate the odds for this occurrence to be (1/38) x (1/38) = 1/1,444. That Bogey sure was a lucky guy!

Once the basic ideas of probability are part of our mental arsenal, we can use them in all kinds of unexpected situations. For example, if you are on a junk-mail list, you probably get regular notices announcing that "You may have already won the $10,000 jackpot!" Is it really worth answering the ad? Well, suppose the mailing went to 100,000 people. Your chances of winning are then 1 in 100,000. Over many contests, therefore, you would expect to win an average of $10,000 x (1/100,000), or ten cents per game. The probability of winning times the amount won is called the "expected gain." You will note that the expected gain in this case is less than the price of the postage stamp you need to enter the contest. In fact, you can expect to lose ten cents every time you play, so the reaction "It's not worth answering this" is correct.

You can even use the concept of expected gain to analyze the old saying that crime doesn't pay. In one study, physicist Julian V. Noble found that the probability of being caught and sent to jail for a burglary was 2.4 percent in 1970, while the average sentence if you were caught was about two years. A probability of 2.4 percent means that the burglar can expect, on the average, to commit 41 crimes before being caught. Suppose he commits these burglaries at the rate of one every eight days. He will, on the average, be caught and jailed at the end of a year and spend the next two years in prison. If he realizes $2,000 per burglary, his income for the three-year period will be $82,000, yielding an annual income of about $27,000. This is, of course, free of all federal, state and local taxes. Perhaps the old saying needs to be reexamined a bit. (The preceding example is based on statistical averages. In real life, of course, some burglars are more skillful than others, and the odds of being caught would vary accordingly.)

The concept of expected gain has a mirror image in the idea of risk. Risk is defined as the probability that some adverse event will occur multiplied by the loss incurred should it do so. For example, suppose

James Trefil's latest book, Sand, Surf, and Spray, *to be published next month by Scribner's, uses the physics of beaches to discuss cosmological ideas.*

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Odds of winning a sweepstakes can be so low that it is not worth paying the postage to enter.

you can expect a flat tire every 20,000 miles you drive, which means that the probability of a flat is 1/20,000 for any given mile. (Again, a statistical average. The probability of a flat varies over the life of the tire.) If the average cost of a flat (including the occasional replacement) is $20, then the risk of getting a flat tire is (1/20,000) x $20—$.001, or .1 cent per mile.

Now you know that you don't have to put a tenth of a cent into a kitty every time your odometer registers another mile. You simply pay for the flat when it occurs. If the cost were greater, however, you might well want to put a little aside for the inevitable rainy day. This is exactly what you do when you pay insurance premiums for major catastrophic events like house fires or prolonged illnesses. Insurance companies collect data which allows them to determine the probability of various events, as well as the likely costs associated with them. The companies then use the risk calculated from these figures to set the premiums.

One key point about risk, however, is that not everyone has to experience the adverse event. You may very well pay insurance premiums all your life without ever entering a claim. This is because the concept of risk deals with averages and not with individuals. It may be true that the number of automobile accidents is fairly constant from year to year, so that we can calculate the probability that any individual will have an accident in any given year. This number actually turns out to be about ten percent. But you can't have .1 accidents—you either have one or none. Thus, as was the case with the flat tire, everyone's driving history is made up of accident-free periods punctuated, perhaps, by an occasional mishap. I like to make this point to my students by telling them about a statue in a small Siberian town of a certain fictitious Count Smerdlovski, the world's Russian-roulette champion. He had a record of 73 and 1.

The art of the possible—and the probable

Thus, considerations of risk bring us right back to a central point of the theory of probability. Statisticians assume that individual events are random and unpredictable in nature, even if the theory allows us to talk about averages. If the average gambler loses a percentage of his money on each play, he knows that the average is calculated by lumping together the few who win a lot with the many who lose. Even the most improbable event—a run of the same number in roulette, a royal flush in poker—has *some* chance of happening. Maybe this will be his lucky night!

This contrast between the possible and the probable often crops up in public debate, especially in arguments about risks associated with things like nuclear reactors and food additives. You often hear statements like "There is one chance in a million—or a billion or a trillion—that X will happen." Probabilities associated with unlikely but disastrous events are difficult to calculate, mainly because the events don't happen very often. If you wanted to check my statements about the probabilities involved in the roll of a die, for example, you could get a die and roll it a few hundred times. If you're talking about an event like Three Mile Island or the chances of a meteoroid hitting a spaceship, on the other hand, you don't have much of a data base to work with. Consequently, in

these cases engineers use a technique called "fault-tree analysis." The idea is to think of all the ways that a particular disaster could occur, and then try to estimate the probability of each path. The probability of the event happening is then just the sum of the individual probabilities.

The advantage of this method is that the individual events that lead up to disasters are a lot more common than the disasters themselves. For example, in order for a rocket engine to explode it may be necessary for a pipe to break, and then for a warning circuit to malfunction, and then for a valve to remain closed, and then. . . . The engineer has data on how often pipes break, because every break doesn't lead to an explosion. The same statement can be made about the circuit and the valve and every other single event in the fault tree. By putting all of these individual pieces together, it is possible to estimate the probability that all of them will happen at once. It's this sort of probability you're likely to encounter in the newspaper. While such numbers are useful, they are not strictly accurate and must be treated accordingly.

Actually, as a staid and sober physicist, my interest in probability is more piqued by the occasional occurrence of improbable events than it is by games of chance. I am particularly intrigued by the perpetual reappearance of two flagrant misuses of probabilistic ideas. The first of these old chestnuts is based on the application of probability in situations where it doesn't apply, and the second on a misunderstanding of the meaning of coincidence.

One study years ago, based strictly on averages, showed that burglary would pay—over the long run.

It's not random when the fix is in

Arguments of the first type have resurfaced most recently in the debate about the origins of life on Earth (SMITHSONIAN, June 1984). They go something like this: if we put a bunch of atoms into a pot, the probability that they will arrange themselves into a DNA molecule by chance is so small that the likelihood of its happening during the lifetime of the Universe is negligible. From this, depending on your state of mind, you conclude that life must have been introduced on Earth by extraterrestrials, that life started by special creation, or that Earth is the only life-bearing planet in the Universe.

If you take this argument seriously, however, you are making a mistake equivalent to believing that Humphrey Bogart was just lucky in that scene from *Casablanca*. It's true that the formation of a DNA molecule by chance is a low-probability event. So were Bogey's back-to-back 22s. The point, however, is that neither of these events is random. In both cases, mechanisms are operating to make the events turn out in a particular way. In the *Casablanca* roulette game, the wheel is "fixed." In the case of DNA, laws of nature make chemical reactions always proceed in certain ways.

The second type of misuse of statistics centers around what I like to call the "hidden message" theory. It goes like this: in some ancient structure, superior beings (usually extraterrestrials) have left a secret message which, if we were only clever enough to decode it, would reveal to us mysteries of the cosmos. The Great Pyramid at Giza is a favorite hunting ground for hidden-message enthusiasts, but almost any old building will do. The idea is to search around until you find that one particular dimension in the

The house is always favored in games like roulette, which is why casinos can afford to buy the drinks.

building is one-billionth of the distance to the moon or one ten-millionth the distance around the world, at which point you announce your result. "Could it be just a coincidence that the height of this column is *exactly* that distance? The people who built it couldn't have known the distance that accurately, so. . . ." I think you can anticipate the rest.

This kind of argument illustrates what one of my old math professors used to call the "golf-ball-on-the-fairway fallacy." The probability that a golf ball will wind up on a particular blade of grass in the fairway is very small. But you don't have to explain why the ball came down on that particular blade because the fact of the matter is that the ball has to land on some blade somewhere. If it had not landed on that one, then it would have landed on some other one.

Significant numbers are like the blades of grass on the fairway. You can generate quantities of them just by looking at the solar system. For example, the mass of Venus divided by the mass of the Earth is .815, the mass of Jupiter divided by the mass of Saturn is 3.34, and so on. By the time you run through this exercise for the masses, radii and the distances from the sun of all nine planets, you will have generated hundreds of thousands of "significant" numbers. Because the rules of the hidden-message game allow you to shift decimal places at will (finding something 100 or 1,000 times bigger or smaller than a significant number is just as good as finding something equal to a significant number), you can't miss. Just as the golf ball has to fall on some blade of grass, anything you want to measure to find a hidden message must fall on some significant number. The low probability of having it fall on a particular number is simply irrelevant, because it has to fall somewhere.

Kennedy-Lincoln: less than meets the eye

A classic example of the "golfball on the fairway" made the rounds shortly after the assassination of John F. Kennedy in 1963. The story, widely circulated in the press and on a popular record, established a series of apparently astonishing coincidences between the assassinations of Presidents Lincoln and Kennedy. Among the points made were these:

1. Lincoln was elected in 1860, Kennedy in 1960
2. Both were assassinated on Fridays, in the presence of their wives
3. Lincoln was killed in Ford's Theater, Kennedy while riding in a car made by the Ford Motor Company
4. Both were succeeded by Vice Presidents named Johnson who were Southern Democrats and former senators
5. Andrew Johnson was born in 1808, Lyndon Johnson in 1908
6. Lincoln's secretary was named John Kennedy, Kennedy's secretary was named Evelyn Lincoln
7. John Wilkes Booth was born in 1839, Lee Harvey Oswald in 1939
8. Booth shot Lincoln in a theater and fled to a warehouse, Oswald shot Kennedy from a warehouse and fled to a theater
9. The names Lincoln and Kennedy have seven letters each
10. The names Andrew Johnson and Lyndon Johnson have 13 letters each

This list is actually very typical of the sort of numerology you run across once in a while. In the first place, some of the "facts" are just wrong—Booth was born in 1838, Lincoln's secretary was named John Nicolay, Booth was trapped in a barn instead of a warehouse. But the real question was whether the coincidences remaining could have had some underlying significance.

The author of the original list is unknown. But Martin Gardner, for many years a columnist at *Scientific*

American and the author of books on bogus science, used the list to demonstrate how a diligent researcher could establish apparently extraordinary similarities between any two lives. Just take the first point as an example. Any President will have gone through many elections in his career. For each election, there are all sorts of numbers associated with the date: the man's age and the time since his marriage, since the birth of his children, since he finished school, since his last election, and so on. The last two digits of the year are just one more item in this collection that can be as long as you make it. That two of these indices should match is not very surprising.

But more important than that, there are many facts about anyone's life that can play the role of the blades of grass on the fairway. If you really started, you could probably write down more than a thousand about your own birth date and place of birth (and number of letters in the town), schools attended, children's names, places lived, etc. Comparing this list with anyone else's will be sure to turn up similarities. (For example, I learned to drive in a Ford, which gives me one point up on both Lincoln and Kennedy; Oswald and Trefil each have six letters. Or consider Presidents McKinley and Garfield. They were both born in Ohio. Their names both have eight letters; the names of their Vice Presidents (Chester Alan Arthur and Theodore Roosevelt) both have 17. Both were assassinated while on trips; the wives of both had fallen sick before the assassinations. And so on.) The reason that something like the Kennedy-Lincoln list holds our attention is that we know that if we had to predict these similarities in advance, the probability of success would be very low. The same is true about predicting the blade of grass on which the golf ball will eventually come to rest. The point is that in this case we're *not* predicting the points of similarity, we're picking them out of literally millions of possible points after the fact. This is like looking at the blade of grass after the ball has come to rest. There are bound to be coincidences in a finite world, and it's always a good idea to think about the golf ball when somebody singles one out.

Having made this point, let me close with one more observation. If you divide the height of the Sears Tower in Chicago (the world's tallest building) by the height of the Woolworth Building in New York, you get 1.836. This is precisely one-thousandth of what you get if you divide the mass of one of the fundamental building blocks of matter, the proton, by the mass of the other fundamental building block, the electron.

Think about it.

A person can find "significant" numbers anywhere he chooses, whether it be in relationships among the planets in the solar system or the dimensions of buildings. What they mean is something else again.

By Edwards Park

Secretary S. Dillon Ripley retires after twenty years of innovation

In two decades the eighth Secretary has transformed the Institution from an attic into a special kind of open university

Mark Twain, a man who had a way with words, once referred to the Smithsonian Institution as a "poor, mildewed old fossil." Well, I have been perambulating around this place for quite a few years now, and I can remember a day when I heard music coming from four different sources along the Mall. I can remember puppet shows and an organ-grinder with a monkey. Walking between museums, I've dodged boomerangs, Frisbees and joggers. Not long ago, I stopped to watch some kids in front of the Arts and Industries Building; they were break dancing. I hate to argue with Mr. Twain, but that doesn't sound fossilized to me, and I know one reason why.

On the 17th of this month the eighth Secretary of the Smithsonian, S. Dillon Ripley, leaves the office in the castle that he has inhabited for the past 20 years. The two decades of his tenure have seen this venerable Institution pop out of the attic and onto the national scene. Eight new museums and seven new research or backup facilities have opened their doors, the number of visitors has more than doubled, major research and acquisition efforts have been launched, and outreach programs—including this magazine—have been inaugurated. The Mall has been enlivened with everything from a visiting glacier (at least a chunk of one) to a life-size fiberglass dinosaur, Uncle Beazley.

Certainly timing had something to do with these changes, but the eighth Secretary fitted the times, and his background had prepared him for the task. Broadly educated and widely traveled, as a young ornithologist he explored the backcountry of New Guinea and Sumatra. During World War II he served with the OSS, coordinating American and British intelligence efforts under the Southeast Asia Command. Ripley is both patrician and urbane, but he's not a man who minds getting his hands dirty; one story from those years is revealing. As the war neared its end he was airlifted into a jungle strip in Thailand; anticipating a meeting with the King's regent—perhaps after an encounter with Japanese troops—he leaped from the plane with a tommy gun in his hands and a set of full-dress attire in his pack. It was in Asia that he got to know his wife-to-be, Mary Livingston, who was also serving in the OSS. Back in the States Ripley taught at Yale, and was director of the Peabody Museum of Natural History there when the Regents tapped him to come to the Smithsonian.

As soon as he arrived in Washington, he made it clear that he had some new ideas about museums. They should not be places that you visited "on Sunday afternoon after a big lunch," he said. Instead he thought of them as "points of contact" with the people, all people. One example: a few years after he took over, the Poor People's Campaign came to Washington. Mostly black, and for the moment homeless, the poverty marchers pitched tents at one end of the Mall. The Smithsonian's top staff met to make plans for safeguarding the nation's treasures from what seemed to them a potentially threatening situation. As some worried officials discussed methods to keep the campaigners out of the museums, Ripley walked in.

According to Assistant Secretary Ralph Rinzler, "He sat down very slowly, put his hands together almost as if he were taking the measure of the vibrations in the room, and spoke up." What he said, very carefully, was that these people were fellow citizens of the United States, and were, of course, welcome in the Smithsonian. In fact, the museums' bathrooms

One more achievement: Secretary Ripley with model of new Center for African, Near Eastern and Asian Cultures.

should be stocked up with soap and paper towels.

Dillon Ripley—he never uses his first name, Sidney—is nearly six-feet-four and has the presence of someone to the manner born. He is generally affable and relaxed, a man who can make people feel comfortable very quickly. But there is steel beneath the courteous tone and mild demeanor. Once I heard him deal with some project organizers whose results displeased him. He started by asking if the project could be changed in such and such a way. The project authorities produced arguments to refute the need for change. Ripley argued back, amiably. The opposition still disagreed.

Ripley's voice became even gentler and the well-bred drawl more pronounced. The effect was that the room stilled and his words came across with unmistakable clarity. "Please understand that this is to be changed in the ways I have explained. If it is not, the project will be ended."

When Ripley arrived in 1964, most of the Institution's museums were strung along Washington's Mall, which, divided by roadways, was heavily used by automobiles but little trod by foot. *That* was going to change. Not long after taking office, Ripley had Joseph Henry's statue jacked up and turned around to face *outward* toward the Mall rather than back toward the castle. The move could be interpreted as a symbol of what was going to happen. "We must have a carousel," said Ripley, who, looking back on his own childhood experiences with museums, wanted to recreate the pleasant, colorful enjoyments of the Tuileries Gardens, just outside the Louvre. And, of course, a carousel soon sprouted in front of the Arts and Industries Building, filling the air with Sousa and Strauss. (I remember seeing Ripley join a group of children in riding that carousel, his legs so long that even when the horse rose, his feet stayed on the floor.)

On an ornithological expedition in Bhutan in 1968, Ripley and guides were photographed by his wife, Mary.

A national front lawn

Not long afterward, plans were laid for the first Folklife Festival. Some people were aghast. Was this how the Smithsonian intended to treat the sacred sward? A few congressmen grumbled that their esplanade had been turned into a midway. But the Folklife Festival was a noisy, jostling success, enlivened with the sounds of music and enriched by the smells of ethnic cooking.

Soon people began to use the Mall as a kind of national front lawn. Balloons soared, kites flew, boomerangs made spectacular returns. And that sense of life and participation spilled over into the museums themselves. The painting on the following pages suggests the look of the Smithsonian at the end of the Ripley years. But the changes Ripley wrought in the Institution were more than skin-deep. He wanted the Smithsonian to be a "company of scholars," a center for ideas, a place modeled more after a university than a museum. Never one to miss an opportunity for symbolism, for the 200th anniversary celebration in 1965 of James Smithson's birth, he joined an academic procession across the Mall—noted scholars marching in their caps and colorful robes. "It gave us," he said, "a sense of academic entity."

Ripley is known for his deft touch with the great and well-known. Eager to get a first-class modern art museum to Washington, he wooed Joseph Hirshhorn for his famous collection, enlisted the support of President and Mrs. Johnson, and overcame the objections of a number of congressmen. The design of the new building caused a stir—"a giant bagel," some called it—but the success of the Hirshhorn Museum and Sculpture Garden outlasted the caviling.

In New York he finessed a lease for the old Carnegie Mansion on Fifth Avenue so that it could house the Cooper-Hewitt Museum—the only Smithsonian museum outside Washington. Looking over the great old house, he discovered a brass banister. To the delight of the New Yorkers he was leading around, he proceeded to slide down it. "We must keep that polished," he admonished when he reached the bottom.

Overleaf: Artists' view of the Smithsonian today
Illustration by Naiad and Walter Einsel

Environmental Research Center

Center for Astrophysics

National Zoo

Tropical Research Institute

...ine Station
...Link Port

1964 - 1984

S. DILLON RIPLEY

Secretary of the Smithsonian Institution

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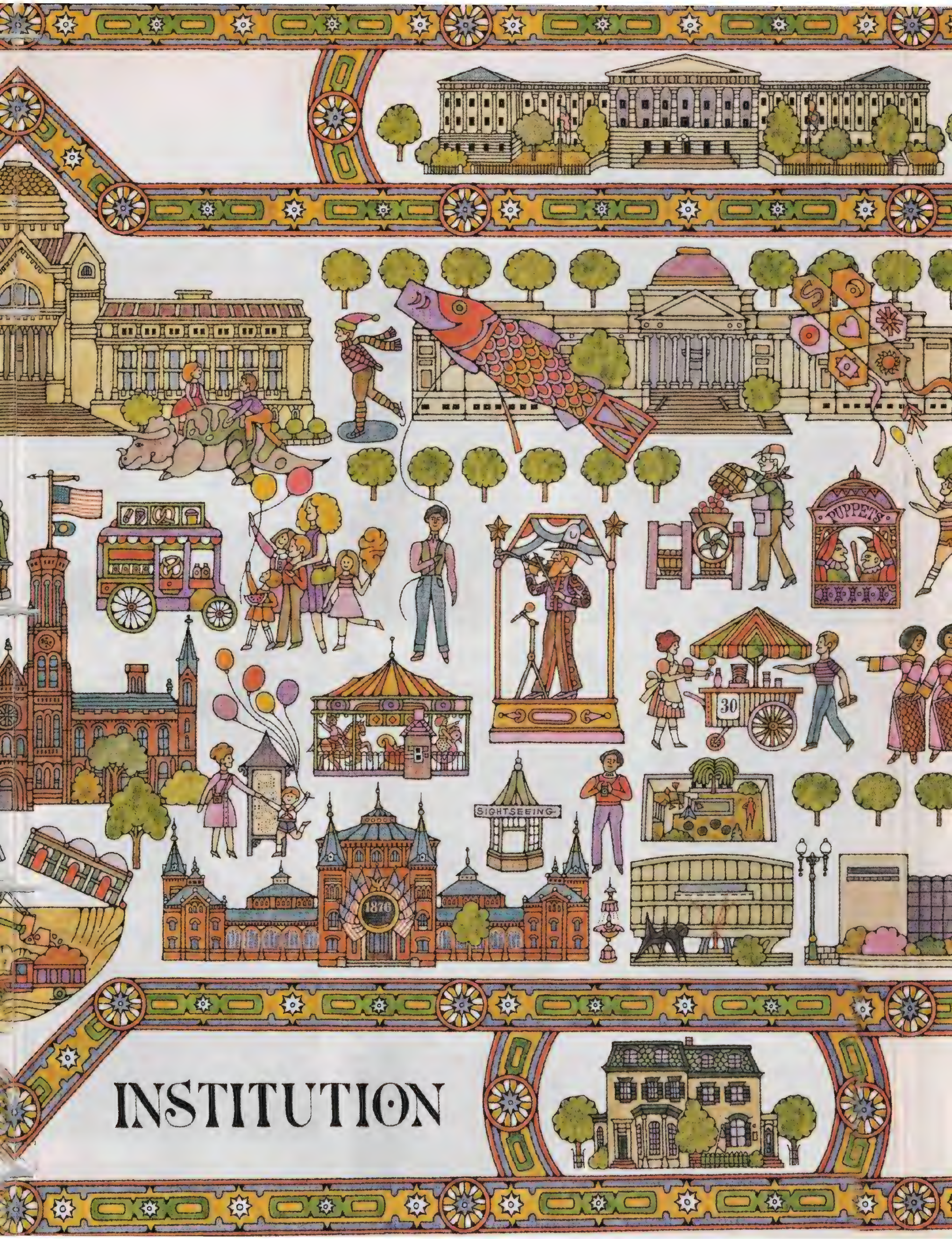
SMITHSONIAN



INSTITUTION

Paul E. Garber Facility

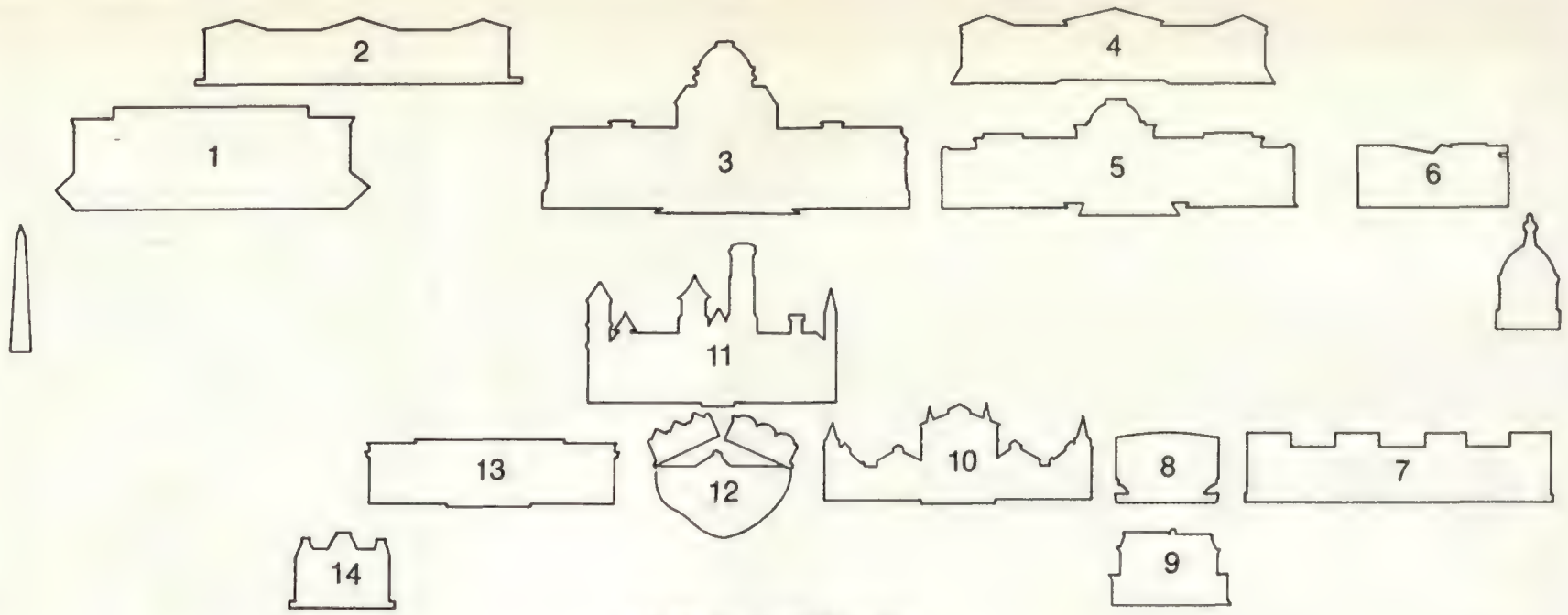
Anacostia Museum

Cooper-Hewitt Museum

Museum Support Center

Front Royal

Maud & Walter Einsel



Key to illustration

1 National Museum of American History; 2 National Museum of American Art; 3 National Museum of Natural History; 4 National Portrait Gallery; 5 National Gallery of Art (administered separately); 6 National Gallery of Art, East Building (administered separately); 7 National Air and Space Museum; 8 Hirshhorn Museum and Sculpture Garden; 9 National Museum of African Art; 10 Arts and Industries Building; 11 Smithsonian Institution Building; 12 Future site of the Center for African, Near Eastern and Asian Cultures; 13 Freer Gallery of Art; 14 Renwick Gallery.

Although he's always had a streak of the showman in him—as a Yale undergraduate, he once considered a career in the theater—Ripley has also remained serious about his research and about conservation. Along with a number of books and scholarly papers, in his spare time he has finished the monumental ten-volume *Handbook of the Birds of India and Pakistan* which he wrote with his old friend Sálim Ali of the Bombay Natural History Society. In pursuing his research, he and Mary, his constant companion in the field, have become old hands in some of the remotest parts of India, Bhutan, Nepal and Tibet.

As a conservationist he has, with the help of Britain's Peter Scott of the Wildfowl Trust, saved the nene goose of Hawaii from extinction, and promoted programs to help rescue the white-winged wood duck of Southeast Asia from the same fate. He has bred rare and endangered species of waterfowl on a system of ponds at the family home in Litchfield, Connecticut. He helped preserve the unique environment of the atoll of Aldabra in the Seychelles, and took a direct hand in developing the Smithsonian's efforts to save the Bengal tiger. In 1980, he met with Chinese scientists and also with Cubans, establishing a rapport that led to a program of scholarly exchange. Mary Ripley, meanwhile, has been a driving force in establishing the National Orchid Collection at the Smithsonian.

The Ripley years have seen the opening of the National Portrait Gallery and the National Collection of Fine Arts (now the National Museum of American Art), the building of the Hirshhorn and the National Air and Space Museum, and the creation of the Renwick Gallery. The Cooper-Hewitt Museum and the Museum of African Art came under the Smithsonian's wing and one of Ripley's proudest endeavors, the Anacostia Neighborhood Museum, opened in a storefront to bring the musem concept to a predominantly underprivileged community.

Near Tucson, the Multiple Mirror Telescope, built in conjunction with the University of Arizona, scans the sky from the peak of Mt. Hopkins. At Front Royal, Virginia, a 3,150-acre center is studying and breeding rare and endangered species. The Smithsonian Tropical Research Institute in Panama has expanded, and new research centers have been created on the Chesapeake Bay and in Florida. The Museum Support Center, a vast storage and conservation facility, and NASM's Paul E. Garber Preservation, Restoration and Storage Facility have opened in Suitland, Maryland.

Ripley's latest achievement has been the establishment of the new Center for African, Near Eastern and Asian Cultures, due to be completed in 1986. Ever the persuader, in a whirlwind of fund-raising to match federal grants, he obtained the financial support of foreign countries, corporations and foundations as well as substantial contributions from Smithsonian Associates. As a centerpiece for the new museums, he obtained a collection of superb Asian art objects from benefactor Arthur M. Sackler.

What S. Dillon Ripley is beginning this month sounds suspiciously unlike retirement as most of us know it. "I shall work on birds in my lab over at Natural History. I shall enjoy my freedom from the tyranny of the In and Out boxes. I shall travel with Mary, but only when *we* want. There are many more things to learn."

Snapshots from a roving Secretary's album

When a live rooster escaped from an exhibit during an Inaugural Ball, it was Ripley to the rescue.

In the field: as part of his research on Asian birds, Ripley examines specimen collected on trip to India.

The Secretary "cuts a mean waltz" at a Renwick function.

Mary Ripley—and assistant—bag insects for Institution.

In 1965, SDR enlisted LBJ to help acquire future Renwick.

Ornithologist Ripley welcomes a new species, Big Bird, who was part of *Sesame Street* exhibition.

In 1967 Ripley and the Mall's famous Uncle Beazley attended opening of Anacostia Neighborhood Museum.

Top-hatted Chief Justice and Secretary rode in President Grant's carriage for Bicentennial gala.

In an annual rite of spring, a long-legged Secretary hitches a ride on the carousel he brought to the Mall.

Ripley joined predecessors Wetmore and Carmichael for 101st birthday of fifth Secretary Abbot (seated).

12
3
6
9

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A student, Jo Ann Falletta, conducts the opening of second movement of Beethoven's Fifth Symphony.

By Christopher Porterfield

At the Juilliard, conducting course plays *molto vivace*

Fireworks fly as Jorge Mester spurs students into mastering secure technique with a baton—but not at the expense of individual style

The complex tracery of her lighted baton is a sort of signature, identifiably her own and like no other.

Crisp economy of Maestro Mester's downbeat shows his technique in signaling the orchestra to begin.

To musicians, he is father figure or antagonist, trusted colleague or charlatan, a font of inspiration or a petty time beater. To the public, he is sex symbol or glorified floorwalker, a high priest of a mysterious cult or a distraction blocking the view. Although, in the century or so since taking command of the modern symphony orchestra, the conductor has become a dominant force in musical life, he remains the most controversial and least understood of artists.

To those of us who are armchair conductors, who perform secretly for our mirrors or give unseen cues from our seats in the concert hall, the conductor is something else as well: an object of rank envy. In Walter Mitty reveries, we tend to suspect we could do his job as well as he does, or at least that the skillful orchestra would play just the same under our wavings as under his. If, stricken in mid-symphony, he had to be helped from the podium and the flustered concertmaster peered out into the auditorium asking, "Is there, perhaps, someone . . .?" who among us doesn't secretly feel able to rise, cough modestly and, calling on 20 years of familiarity with the LP of the same piece, stride down the aisle toward—triumph!

We're wrong, of course. The quickest way to find out how wrong—and to get a chastening glimpse of the complicated and exciting work conductors really

Photographs by Stephanie Maze

A course for neophyte conductors

do—is to visit a music conservatory where neophyte baton wielders receive topflight professional training. Not long ago I spent some days in Jorge Mester's conducting class at the Juilliard School in New York City, and found that it is no place for the faint of heart, the thin of skin or—lowest of all—the amateur.

The class meets in a windowless room large enough to accommodate the more or less complete student orchestra that is essential to the proceedings. Mester presides from a wooden table just behind the violins. He is a lithe, compact, mustachioed man of 49, with a sharp glance and a quick sense of humor. In his jeans and open-neck shirt he has an air of brisk informality, but he brings weighty credentials to his role. He studied at Juilliard in the 1950s and has been a member of the faculty off and on since 1956, and this year he was appointed Chairman of Conducting Studies. Besides being an accomplished violist, he is a seasoned conductor who has put in stints at the head of the Louisville Orchestra and at present is music director of both the Casals Festival in Puerto Rico and the Aspen Festival.

Class procedure is simple. Each of the handful of students takes a turn conducting portions of assigned pieces; Stravinsky's *Le Sacre du printemps* and Mahler's *Kindertotenlieder* were the two I heard. For these young conductors, stepping up on the podium is the musical equivalent of going over the top in the trenches at Verdun. Never mind the complexity of the scores. Never mind the challenge of 75 or so unimpressed student players. It is Mester, from his table, who pins them down with withering volleys of questions, commands and criticisms.

I sat next to him—it seemed the safest place—as he followed his score, periodically giving a peremptory clap of his hands to bring the music to a halt.

Clap! "What was that BAAH? Was that the right note in the trumpet?" he would ask. Or: *Clap!* "Now go back to that last chord and fix the intonation." Or: *Clap!* "Would you explain to the orchestra what makes Mahler's orchestration different from anybody else's?" Or: *Clap!* "What string are the violins playing that note on? What string *should* they be playing it on?"

Whoa! Mester reins in Brazil's Fabio Mechetti who, by leaning into orchestra, lessens his body control.

An "omnipresent conscience"

Only occasionally did he go to the podium to demonstrate a few bars himself. Usually he forced the students to work things out on their own. "What do *you* think is wrong there?" he would ask. Once he stopped everything and simply pointed to his ear. It was up to the hapless young man on the podium to identify the problem, let alone the solution.

"He's not so much a teacher as an omnipresent conscience," graduate student David Abell, 25, confided. "He makes us conscious of what we're doing at every moment, and of what we're hearing. The teacher who waits until afterward to comment—well, I can get that by listening to a tape of what I've done. Jorge *confronts* you."

Later, Mester cheerfully agreed. "I like to put them on the spot," he said in an accent that bore only the faintest trace of a childhood in his native Mexico. "I look for what makes them uncomfortable, and then I

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Exercises to correct oft-repeated faults show Mark Stringer lowering briefcase to sense the bottom of beat, conducting from beneath coat to focus on baton, holding pencil between lips to avoid tensing.

make that discomfort as obvious as possible." Lest this seem sadistic, he quickly adds that the point is to make the students "find the way toward comfort, and it's important that they do it themselves. After all, conducting is a physical act. To do it well you must have relaxation, ease, freedom."

Mester has sometimes gone to unorthodox lengths to instill that freedom. When one student betrayed tension by constantly pursing his lips, Mester made him conduct with a pencil clamped between them. Another whose baton arm was too floppy had a splint tied under his sleeve from the heel of his hand to his elbow. In a few cases where students couldn't shake off a robotlike rigidity and awkwardness on the podium, Mester sent them down the hall to take classes in dance and in the Alexander Technique—a therapy that relaxes muscles and balances the body.

With new students, Mester likes to begin by asking for a one-sentence definition of conducting. (His own is "the transmission of musical impulse through gesture.") "It usually takes them a half-hour just to get to the word 'gesture,' " he told me. "It's astonishing to see how young conductors, when they get up in front of an orchestra, start explaining and stop conducting. Sometimes I impose a gag rule for a couple of weeks. Of course, the sense of having a special message to convey is part of what makes them conductors, but I think it is important to break down the desire to talk, to clear away the mists of grandiloquence, which can be a cover for nerves and insufficient technique."

Mester's old teacher at Juilliard, the French conductor Jean Morel, liked to describe conducting as "the silent art," and Mester goes along with that wholeheartedly. "A conductor must personify the essence of the music. Sometimes I tell my students, 'Put the baton down. Conduct without your arm. Use your body. Feel the music emanating from inside.' "

Clarity, economy and, above all, expressiveness—these are the qualities Mester consistently demands from his students' gestures.

"Why are you making such a big deal about that silent beat?" he asked at one point. "You look like a Dutch windmill."

"There's a tempo change there," replied the young conductor. "I thought they needed a big sign."

"The less the better," said Mester. "I don't want you to overconduct."

To another student who was leading the orchestra through a soulful legato passage, Mester commented, "That beat is a little facile for what's happening."

"The tempo is all right," said the student.

"It may be all right but you're disconnected from

Christopher Porterfield is a senior editor at Time, *has played clarinet and saxophone professionally, and when pressed admits to "a little piano" as well.*

The effort was as important as the end.

Again, this summer, the best swimmers and divers gathered to compete for the most coveted awards in amateur sports. And though many did win medals, all are worthy of praise. For in their effort to achieve that goal can be found their most noble triumph — the desire to be the very best they can be.

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the texture of the piece. You've got to *engage* the orchestra. In those slow crescendos imagine that you're pulling a wet towel out of the bathtub."

Still another student began molding the music in the air with his left hand. "What," inquired Mester in a tone that contained its own answer, "is that hand doing?" He invited the orchestra members to shout "Boo!" whenever they saw the student's left hand doing something unnecessary. The music had no sooner resumed than Mester himself was on his feet. "Boo!" he yelled. "Boo! Boo!" The student was ordered to hold the offending hand at his side, and finally to jam it into his hip pocket.

Mercifully, a private lesson

I too had my turn under fire. Mester had suggested that a hands-on introduction to the fundamentals might help me appreciate the more advanced travails of Juilliard's student conductors, and I agreed. My lesson was not with the orchestra, however, but in the privacy of Mester's trim, smart apartment on Central Park West a few days later. If at first I regretted missing out on the fantasy-come-true of standing in front of row on row of obedient musicians, I soon felt grateful to be spared public humiliation. For despite all my years of listening to music and observing conductors—often in a professional capacity as a music journalist—and despite my study of music theory and youthful experience playing the clarinet in a community symphony, theater orchestras and dance bands, I found I couldn't even give a proper downbeat.

I had always known it was harder than it seemed on Sammy Kaye's old radio show *So You Want to Lead a Band?*, but this was absurd. There I was behind a coffee table. Mester sat a few feet away on the edge of a sofa, holding an imaginary viola and poised to follow me as best as he could. Again and again I brought the baton down, slashing the air, finally jabbing furiously, but I couldn't quite get Mester to sing his note on time. My problem, he finally told me, was that I myself didn't know where the bottom of my beat was.

Soon he had me waving my arms through the air, tracing figure eights, slapping my thighs, weaving my body to loosen up. Gradually I began to feel each swing of my conducting arm as the arc of a pendulum, and gravity told me where the bottom of the arc was. "Usually it's right here," said Mester, touching a point about navel-high.

But something was still wrong with my downbeat. "Breathe," Mester instructed, and I realized that I hadn't done so for a full 30 seconds. "Inhale before you give the beat, then exhale at the bottom of the arc, just as if you were singing the music. Breathing is the motor on which you communicate with the orchestra."

Videotapes and mirrors can point up bad habits, but Mester discourages their use on a regular basis.

We moved on to exercises in which I was supposed to make him "play" faster or slower, or louder or softer—simple maneuvers that nevertheless proved beyond me. A feeling of power is usually considered one of the gratifications of conducting; it comes readily enough in front of the mirror while the record player thunders out the finale to Beethoven's Fifth. But as I churned the air in Mester's living room, my major sensation was one of helplessness, as if I were rolling downhill in a car and couldn't get the steering or brakes to work. "What should I do?" I asked.

Mester grinned at me. "You figure it out."

With his help, I began to apprehend a few guiding principles. The first three might be expressed as "Prepare, prepare, prepare." To the orchestra, more important than any given beat is the beat before it, which signals what's to come. "Mentally, a conductor must always be ahead of the music, preparing everything, yet his ears must always be with the music," Mester explained to me.

I learned that flailing motions high over my head wouldn't draw any greater volume from Mester, but that urgent, stabbing beats right in front of my chest would. "Intensity, not size, dictates dynamics," he

However, in the privacy of his home Andreas Delfs, as many others, cannot resist checking his technique.

said. I began to sense that I was moving the baton not simply through air, but through a tangible medium that corresponded—or should have corresponded—to the texture of sound I wanted. "That's it," said Mester as I arched the baton slowly over several beats to get a drawn-out tone from him. "For that sound it should feel like you're dragging the baton through taffy."

The lesson over, I sat down for a much-needed rest and ego repair. It was no consolation at that point to reflect that many eminent conductors have had their own eccentricities in the mechanics of the beat. Wilhelm Furtwängler was notorious among musicians for the indecipherable quivering motions of his baton, reminiscent of an agitated sea anemone. Sir Thomas Beecham's hands and body seemed to go in all directions at once, and an English critic once saw him get his baton tangled up in the back of his coat.

"Sure, my students throw such examples up to me," Mester said. "But those men were great in spite of, not because of, any technical limitations. Their knowledge, musicianship, will and charisma enabled them to overcome their insufficiencies. I tell my students, 'I can't teach you their secret. I can only teach you to be just as clear and concise as possible, and to make your technique work for you instead of against you."

Technique, for Mester, includes a conductor's intellectual approach to a score as well as his psychological approach to handling the orchestra. "I insist on clarity of thought," he said. "I want students who can analyze a problem—whether on a score or in a rehearsal situation—break it down into component parts and find ways to surmount it. A conductor must communicate well with the orchestra and go right to the heart of what's wrong, so the players are always with him."

"Whose beat are you giving here?"

Back in class at Juilliard a few days later, I had a chance to see what he meant. A first-year student was struggling to pull together a thorny section of Stravinsky's *Sacre du printemps.* Mester's running critique focused almost exclusively on the young man's rehearsal strategy. "Which players are you talking to?" he demanded. "Whose beat are you giving here?" "Why do you ask all the strings to repeat something that's scored only for violins and cellos?" After the student separated a jumbled rhythmic passage, rehearsing it first with the strings and then with the brass, he started to go on to something else. "No—finish it!" Mester snapped. "Put them *together* now!"

Mester turned to me and whispered: "You see, this fellow's trouble is that he's scattered. He *looks* like a conductor up there, but he doesn't think of the ultimate logic of what he's doing. His instructions are fuzzy. Every conductor makes an orchestra act the way he acts. He's wasted so much time on the wrong things that the players are talking and laughing among themselves. He's scattered, and now he's scattered them."

Emphasizing technique, Mester nevertheless doesn't neglect style or emotional content. Right after the Stravinsky, a student mezzo-soprano joined the class to rehearse one of the songs of the *Kindertotenlieder.* The conductor was a deeply earnest, boyish-looking beanpole appropriately named Mark Stringer. For once, Mester allowed the rehearsal to go straight through without interruption. As the last notes died away, Stringer looked warily over at his teacher. "Are you going to kill me now?"

"No, no," said Mester. "I just worry that this song is over before it begins."

"You mean the tempo is too fast?"

"I mean it's like water sliding down a hill. It should be very *resistant.* Even the little accompaniment figure in the harp—it shouldn't be perfunctory."

"I know," said Stringer with a grimace. "Every note should be a miracle in itself."

He and the singer launched into the piece again. This time Mester interrupted. "I still don't see the

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intensity in those upbeats for the woodwinds." Arching his eyebrows, Mester plaintively intoned the clarinet and oboe parts: "Dee-*dee*, dee-*dee*. You can't glide through those. They're the whole point of the piece, those little internal flutterings."

Stringer gave the downbeat a third time, and the room filled with appropriately yearning, dark-tinged Mahler flutterings. Stringer called out, "Is this what you're looking for?"

"Well," replied Mester, "I hope it's what *you're* looking for."

Afterward, Stringer, a 19-year-old undergraduate, discussed Mester's policy on interpretive latitude: "You have to have a pretty concrete reason for what you do or he'll pin you to the wall, but the reason doesn't have to agree with his view. Musically you're pretty free. He looks to see what's in you and then he'll mold around that."

Mester put it this way: "I want to make sure they're not so concerned with technical precision that they'll miss the poetic content of the music. On the other hand, they can only illuminate the poetic content when they're able to forget about technique entirely. But unless they conduct something totally out of character—make the orchestra sound the same in Berlioz as in Mozart, for instance—I don't feel it's my job to challenge them on style until they're past the stage of technical consolidation."

Mester suggested, too, that his charges would have plenty of time for stylistic and emotional growth later. Conductors are a long-lived breed. Think of Toscanini, Pierre Monteux, Bruno Walter, Klemperer, Stokowski—all active into their 80s. The work not only requires physical vigor but seems to prolong it. "It's the aerobics of it all, I suppose," said Mester. "There's also the social aspect. You feel you are an important part of society, or at least relevant. And at best it's extremely elevating and exhilarating, all the more so as you get older. You see so much more deeply into the music at, say, 50 than you do at 20."

At this stage, in other words, there are reasonable limits to what teaching like Mester's can accomplish, just as there are in any creative field. One definition of those limits was given to me by 24-year-old Andreas Delfs, who was working on his master's degree.

"When I came here I was very uncontrolled," Delfs said. "Mester taught me to use my body more economically. Of course, at the end is still the music, and sometimes you still don't know why it works better one way than another. I believe what makes you a special conductor is the thing you can't be taught—that is, the power of communication, the charisma."

When I repeated these remarks to Mester, he didn't necessarily disagree. "Juilliard basically exists to train people who have the potential of a major career," he said. "In such people, forceful personality and charisma usually go along with talent. So my only problem is keeping them under control. Meanwhile, I want to turn out students of such expertise that, when they get in front of an orchestra, the musicians will say, 'Well, this guy knows what he's doing, he's not a phony, he hears, he doesn't waste time at rehearsal, he knows what he wants and how to get it.' If he also happens to be an artist—fine. But I can't make him that."

"What would you most like the music world to say of your students?" I asked.

"Well," Mester replied, after a moment's reflection, "when I was just out of Juilliard myself, I got a job conducting a concert with a famous opera singer. Since she didn't know anything about me she was uneasy, and at our first meeting she asked me to tell her about my background. I started by saying I had studied with Jean Morel. 'Ah,' she said. 'In that case, I don't have to know any more.' That's it. That's what I'd like people to say. 'You studied with Jorge Mester? In that case I don't have to know any more.' "

One thing is certain. Next time I'm alone and can put on a record of Beethoven's Fifth, the Mester training is going to be plenty good enough for my mirror.

At Alice Tully Hall, an animated Mester conducts Juilliard Orchestra in performance of Mahler's Sixth.

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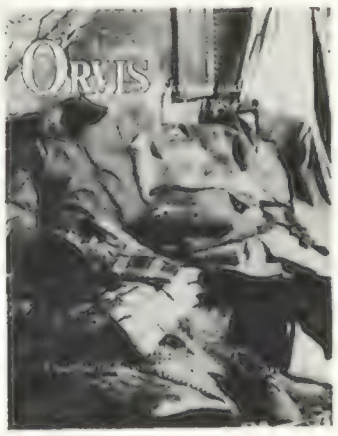

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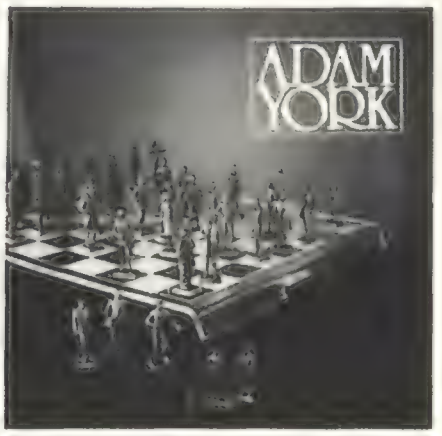

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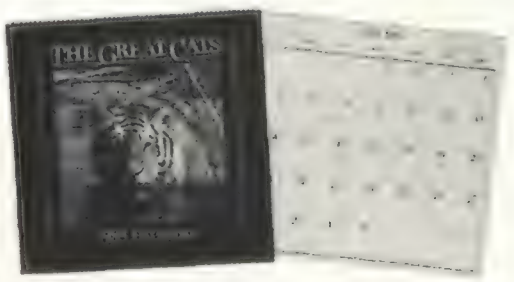

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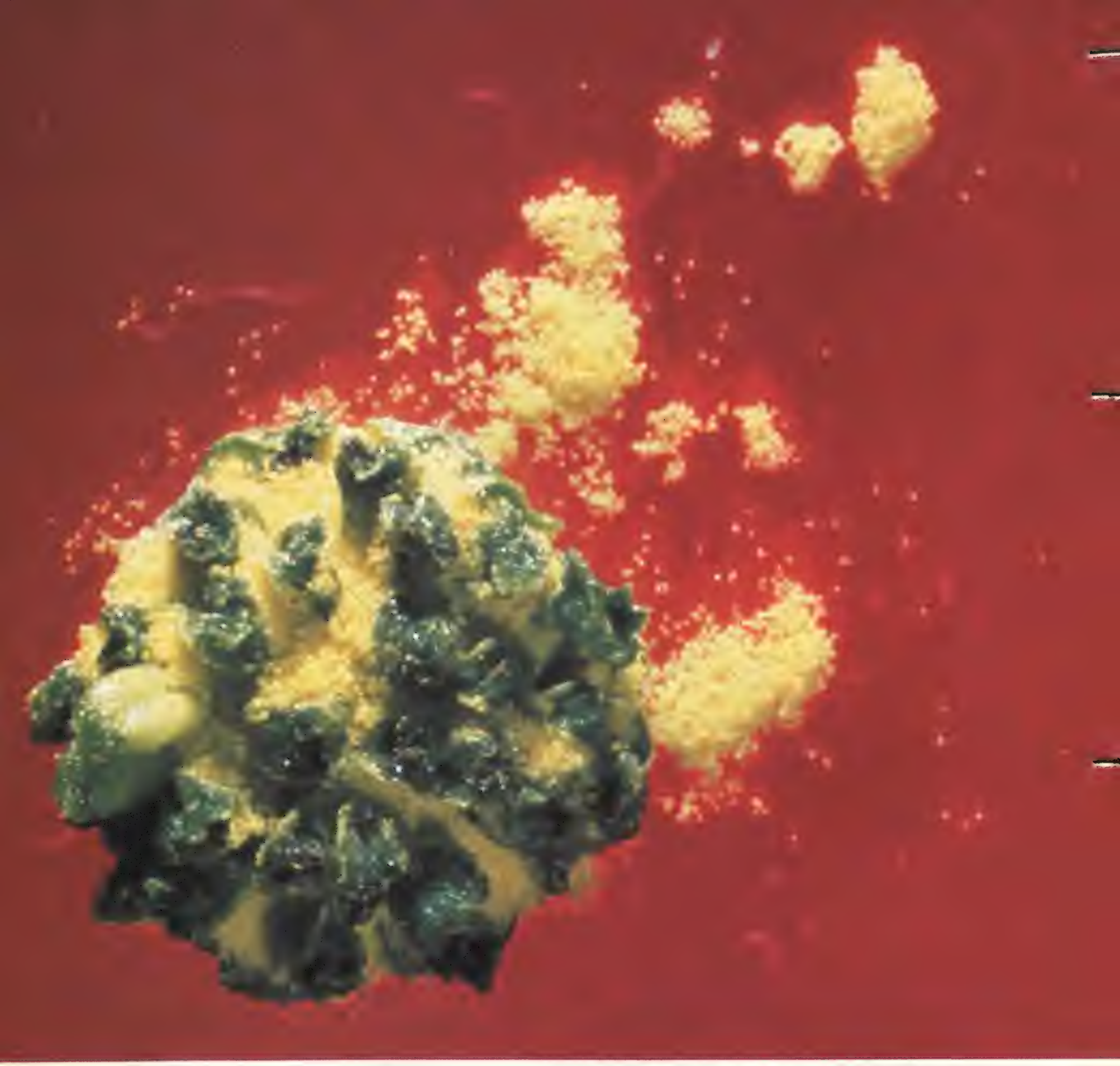

Announcing the arrival of yet another hay fever season, anthers of black walnut tree release pollen.

By Susan V. Lawrence

Recent advances in hay fever research are nothing to sneeze at

When summer comes, grasses, then weeds, continue the merciless onslaught against 15 million Americans.

For 200 years, scientists—many as sufferers themselves—have tried to solve the mystery; now, with new clues, they are getting close

The flowering glories of spring, the rich sun-warmed smells of summer and the Earth's harvest each fall all evoke in our mechanized and urbanized culture the urge to get outside and into closer touch with dirt and growing things. For millions of us, however, that yearning can result in the extremely uncomfortable consequences of hay fever.

Pollen released by flowering plants, borne on the wind to the nose of an unfortunate victim, produces the violent sneezing, watering eyes, streaming nose, and itching of nose, throat and roof of mouth that are the hallmarks of allergic rhinitis, also known at one time or another as hay fever, June cold, rose cold, autumnal catarrh and catarrhus aestivus. The classic symptoms may also be accompanied by the bronchial wheezing of asthma, although not all asthma is caused by allergy.

Hay isn't really the offender

Doctors prefer the term allergic rhinitis because hay is not the sole or even the major cause of the condition. Pollens from trees, grasses and weeds—especially the widespread ragweed—can all cause the maddening symptoms (while oft-blamed goldenrod rarely does). Fungus spores, house dust and animal danders are other significant causes. Because multiple allergies are not uncommon, many people find nearly every season of the year unpleasant, and escape nearly impossible.

Hay fever can be thought of as an immune response run wild, and medical researchers have hopes of short-circuiting the response at several points in the process. Pollen grains are essentially harmless to humans, but the body reacts against them as if they were dangerous parasites. Hay fever appears to be a case of mistaken identity and overkill. There is good news, however, in both the short and the long run. In the near future it appears possible that the years of injections allergy patients endure may be greatly reduced. And over the longer haul researchers expect to be able to defuse the allergic response itself in any one of several ways. What is happening is that researchers are finally unraveling the nitty gritty of what really goes on in hay fever, and once they fully understand the process they can stop it.

The causes cannot be removed. Flowering plants have been around for 130 to 140 million years, considerably longer than *Homo sapiens*. No one knows how far back hay fever goes, but as long ago as 1563 the Italian physician Botallo described patients who complained that roses caused headache, itching and sneezing. Of the more than 250,000 species of flowering plants, the less glamorous wind-pollinating types are those that cause trouble in the human nose. (Most plants with showy, conspicuous flowers are insect-

Photographs by Yoav Levy/Phototake

Mayo Clinic researcher tests volunteer's change in airflow after experimental exposure to pollen.

A skin test to determine the severity of the allergic reaction is given to a patient at Johns Hopkins.

In clinical test, volunteer who has taken a new drug is challenged with pollen; mask measures breathing.

pollinated and thus innocent.) But not all wind-pollinated plants are significant causes of hay fever. Some shed little pollen; others produce heavy pollen grains that do not travel far. The pollen of still others is not known to cause allergic symptoms.

For sufferers, the species that do cause trouble are more than enough, however, because trees pollinate in early spring, grasses from spring through midsummer, and weeds from midsummer to fall. Worse yet, fungus spores may be found in the air at any time except when the ground is covered with snow.

Elms, maples, ashes, oaks, walnuts, hickories, sycamores, mulberries, palms, birches, alders, poplars, aspens, cottonwoods, junipers, chestnuts, beeches and olives are just some of the trees that can cause hay fever. Bluegrass and Bermuda, timothy and orchard grasses produce pollens that are common allergens. Among weeds, the genus so delightfully named *Ambrosia* may serve as food for the gods, but it is known and feared by humans as the nearly ubiquitous ragweed. Those who have sought the desert may find, to their sorrow, that the sagebrush and thistle, as well as those tumbling tumbleweeds, send them fleeing back to central air conditioning.

Although most pollen never disperses far from its source, the grains that do become airborne may be carried long distances, particularly when warm, dry, rapidly moving air passes over the plants. Pollen counts as low as 20 grains per cubic meter produce allergic symptoms in sensitive individuals, and a single plant may release millions of grains at one time.

When pollen grains collide with human beings, they are trapped in an environment that initially is hospitable enough: the warm, moist mucous membranes. In hay fever victims, however, the arrival of a few pollen grains signals the immune system to protect the body from a dangerous invader. The defensive reaction is swift, complex and efficient, as well as maddening for the sufferer whose nose, eyes and throat suddenly become the scene of a raging battle such as that described by the 19th-century English essayist Sydney Smith: "My fear is of perishing by deliquescence—I melt away in nasal and lachrymal profluvia.... The membrane is so irritable that light, dust, contradiction, an absurd remark, the sight of a dissenter—anything, sets me sneezing, and if I begin sneezing at 12, I don't leave off 'til two o'clock—and am heard distinctly in Taunton when the wind sets that way, at a distance of six miles. Turn your mind to this little curse. If consumption is too powerful for physicians, at least they should not suffer themselves to be outwitted by such a little upstart as hay-fever. . . ."

The author, a free-lance writer who lives outside Washington, D.C., writes on science and medical issues.

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Scientists did indeed turn their minds to essayist Smith's "little upstart." No doubt he would have been surprised to find that nearly 200 years of research has been necessary to arrive at even a partial understanding of hay fever. The allergic response has proved to be one of the most mysterious parts of the body's immune-response capability and is only now becoming understood in detail.

The 19th century was long on suffering and short on understanding for the hay fever sufferer. At one time or another, experts recommended opium, footbaths and arsenic—as well as "nature cures," dietary cures, autosuggestion, "animal magnetism and spiritualism," medicated vapors and inhalations, and osteopathic manipulation of the spine. And yet, at the same time, genuine advances were being made.

Hay fever was once thought to be rare

Current research has its roots in the 19th-century enthusiasm for "scientific medicine" and the interest in the body's immune system spurred by Pasteur's elucidation of the germ theory of disease. Credited with the first clinical description of hay fever is English physician John Bostock, who in 1819 reported several cases of "catarrhus aestivus" or "summer catarrh" to the Royal Medical and Chirurgical Society of London. Subsequently, American and European physicians, often sufferers themselves, turned their attention to what was considered a very rare disease.

The groundwork laid by 19th-century investigators was in the main quite solid. By the century's end, their enthusiasm for self-experimentation had at last settled the debates over the cause of the various forms of periodic allergic rhinitis: it was pollen.

The most thorough experimenter was British homeopath Charles Blackley, who made extensive studies of pollen and developed techniques still used today. Blackley, who observed that "North America is said to have very few [cases] but this will probably be found to be an error," was a hay fever sufferer who perhaps drew some comfort from his observation that "Hay-fever is said to be an aristocratic disease, and there can be no doubt that if it is not almost wholly confined to the upper classes of society, it is rarely, if ever, met with but among the educated."

Although that opinion might give one cause to doubt Blackley's scientific probity, he undertook a number of sound experiments. He measured pollen distribution and developed the precursor of the scratch tests familiar to modern-day sufferers who visit allergy specialists. Blackley scratched one forearm with a lancet and applied pollen from rye grass to the area, controlling the test by making a similar abrasion, without applying pollen, on the other arm.

"In a few minutes after the pollen had been applied," he wrote, "the abraded spot began to itch intensely: the parts immediately around the abrasion began to swell. . . . Although the swelling had the

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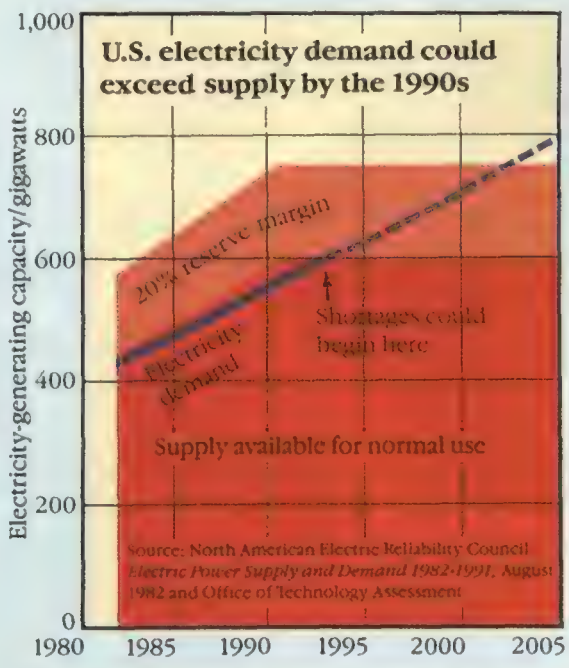

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These plants and more will likely be needed to avoid electricity shortages in the 1990s. Yet utilities are faced with many obstacles and uncertainties.

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These problems need to be solved through the understanding and cooperation of the industry, government, and the public. Only then will the utilities be able to take the steps needed to prevent electricity shortages and sustain a growing economy.

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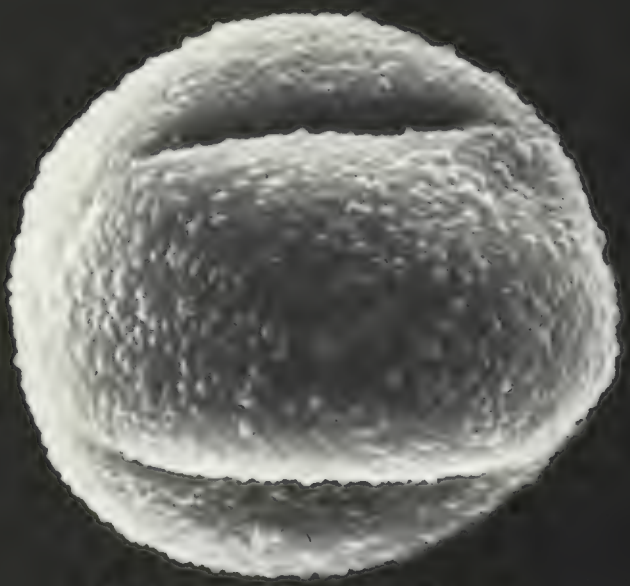
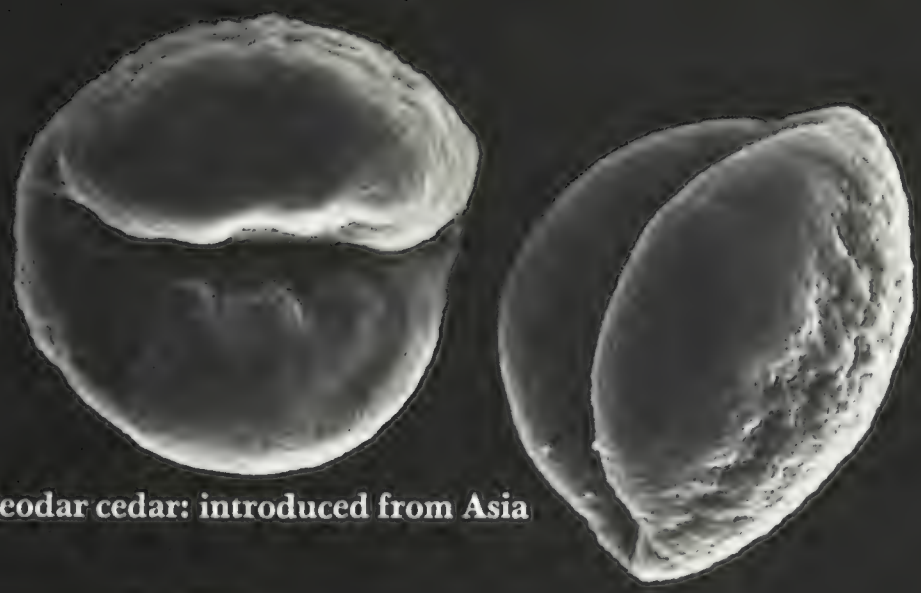
Airborne misery



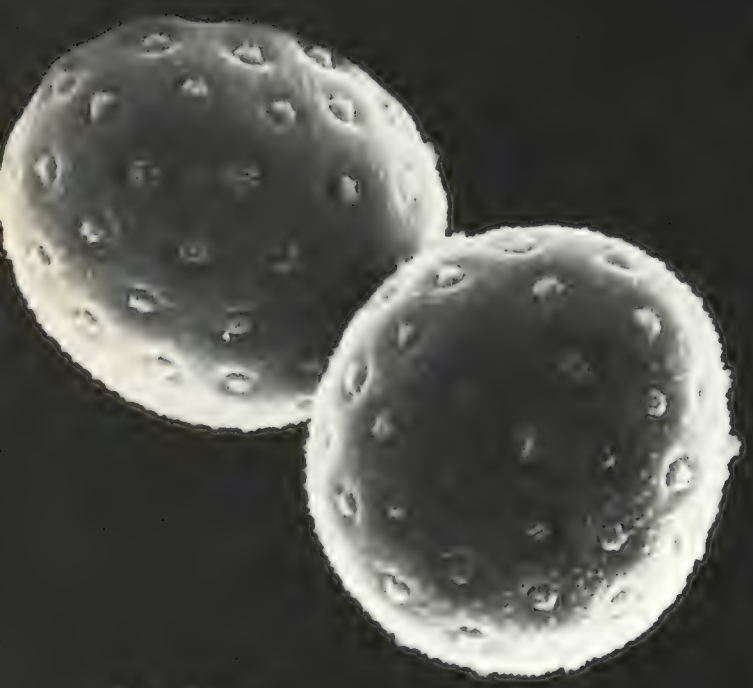
Oak: worse than most trees



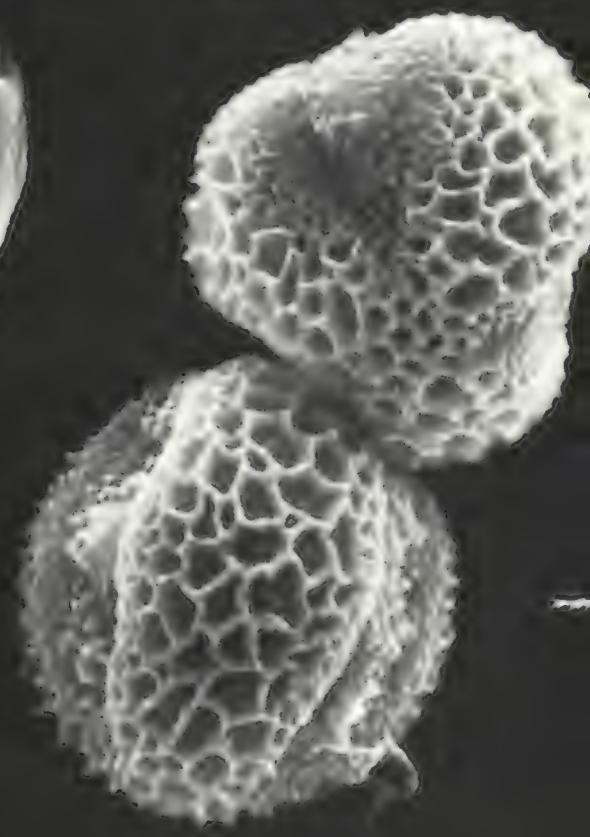
Deodar cedar: introduced from Asia

Willow: not too punishing

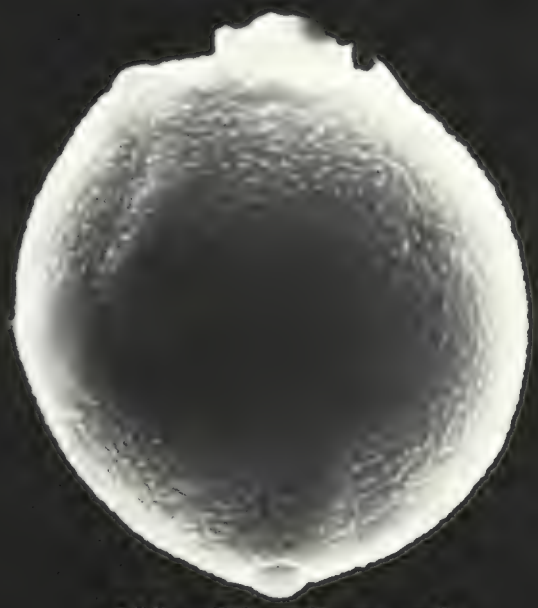
Plantain: bad on both coasts



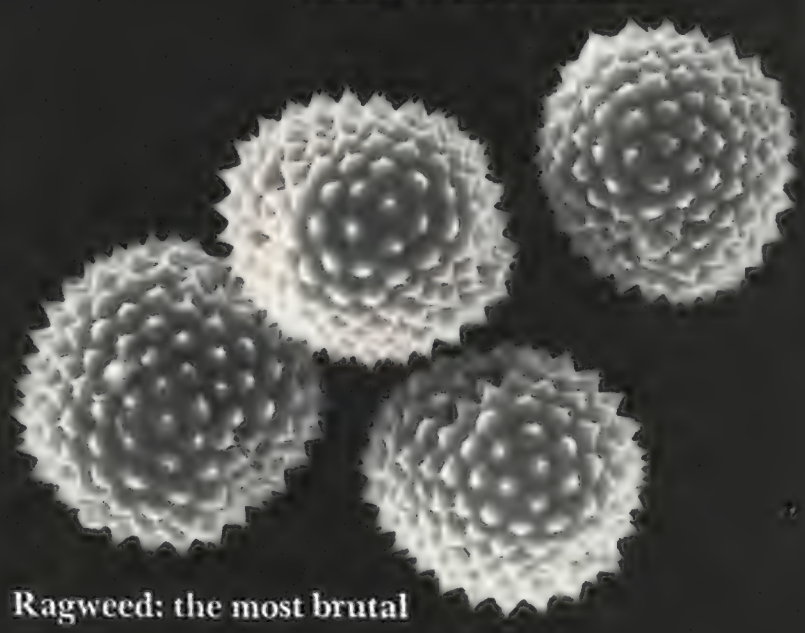
Lamb's quarters: minor offender



Bluegrass: problem in the East



Alder: West Coast cad



Ragweed: the most brutal

Winged dock: in the West

appearance of oedema, it located itself at first exactly around the abrasion to which the pollen had been applied, and gradually spread from this point and formed a flattened tumour."

Those who have taken their symptoms to an allergist will probably recognize this procedure. The "wheal-and-flare" reaction described so precisely by Blackley is still considered a positive indication of what is now termed "allergic sensitization." Although several blood tests are now of some use in diagnosing allergy, skin tests remain the fastest, least expensive and most reliable way of determining allergy.

The next step came in 1911, when researchers found that inoculating people repeatedly with the pollen extracts used for skin testing seemed to make them better able to tolerate exposure to pollen. Allergists began treating people accordingly, extending the concept to other materials thought to cause allergic symptoms and giving rise to a multimillion-dollar industry in the process. Pharmaceutical companies prepare hundreds of allergenic extracts, sometimes drawing on laboratories in the East, Midwest, and West that harvest material from trees, grasses and weeds and sell them for diagnosis and treatment.

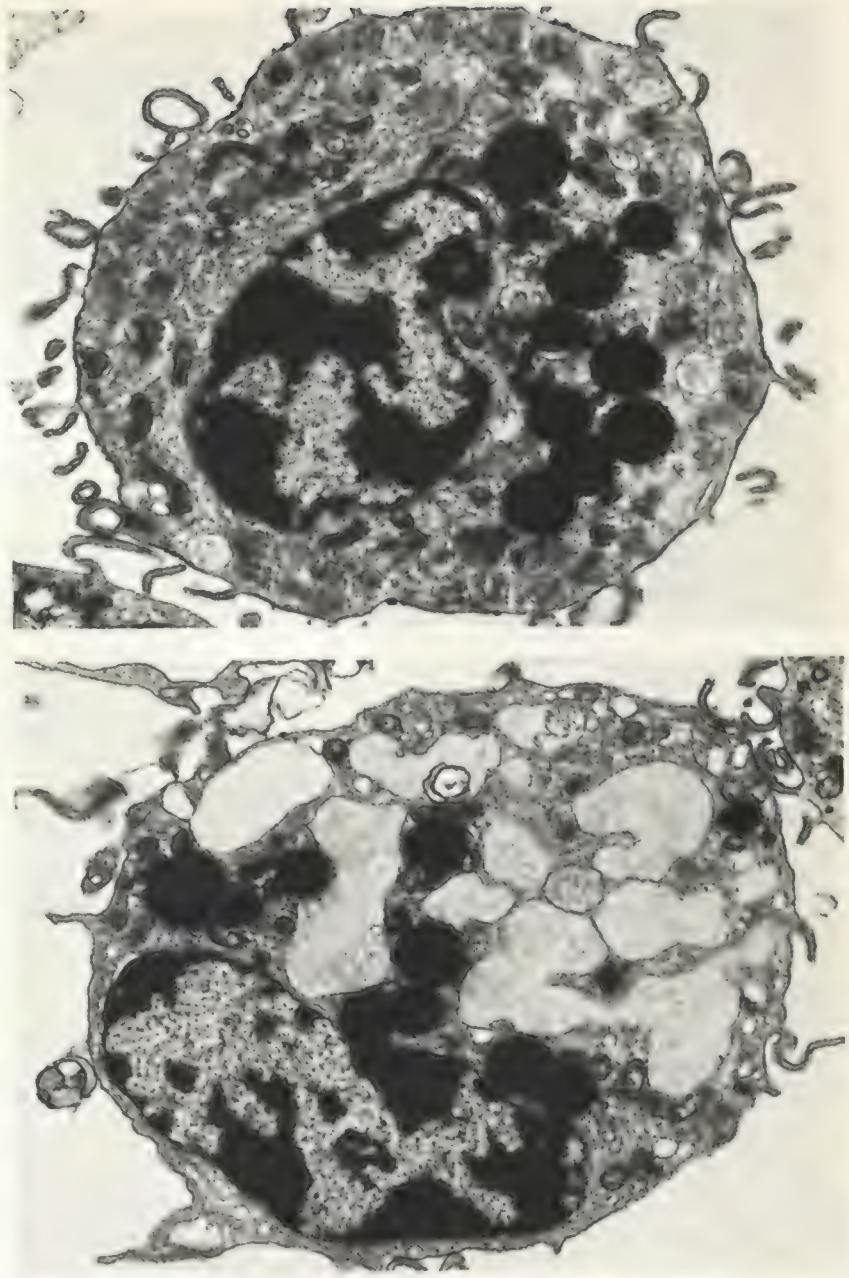
The merits of allergic desensitization, or immunotherapy, were long in doubt. Some considered the lengthy injection process a form of "black magic," but recent studies have documented the validity of the basic process. Repeated injections of antigenic material stimulate the production of one of the body's basic defense substances. The very longevity of this approach to treatment, however, has posed difficulties for researchers, clinicians and patients.

Up until now, the desensitization process has been long, unpleasant and costly, with as many as 120 injections given over a period of years for each allergen. The shots are begun at low doses so that the patient does not suffer the allergy attacks he is trying to avoid in the first place. And, while nearly 2,000 allergenic extracts are available, their potency and effectiveness have varied widely, because their production has not been standardized from one laboratory to another. The doctor often was unsure how strong the extract he was administering actually was.

Two things are happening that will make desensitization easier and quicker. The first is that extracts are now being standardized, so the physician can be sure how much of the active agent he is injecting and thus reach the maximum dose more quickly.

At the same time, researchers at both Northwestern and Johns Hopkins have been able to modify the ragweed antigen in ways that make it possible to desensitize a patient with less than one-half of the normal number of shots. Their modified antigens are less likely to trigger the serious reactions that often occur with standard extracts.

Doctors believed desensitization worked long before they knew *how* it worked. Only in the past few years have the crucial details of the allergic response become clear. In a susceptible individual, initial exposure to pollen or some other allergy-causing substance (an allergen) results in plasma cells producing an antibody known as immunoglobulin E, or IgE. It is IgE that sets up the victim not only for hay fever, but for hives, allergic asthma and the catastrophic collapse of the respiratory system known as anaphylaxis. Most people have only trace amounts of IgE in their system; susceptible people, unfortunately, have more. The IgE molecules attach themselves to receptors on the membranes of mast cells in the linings of the respiratory

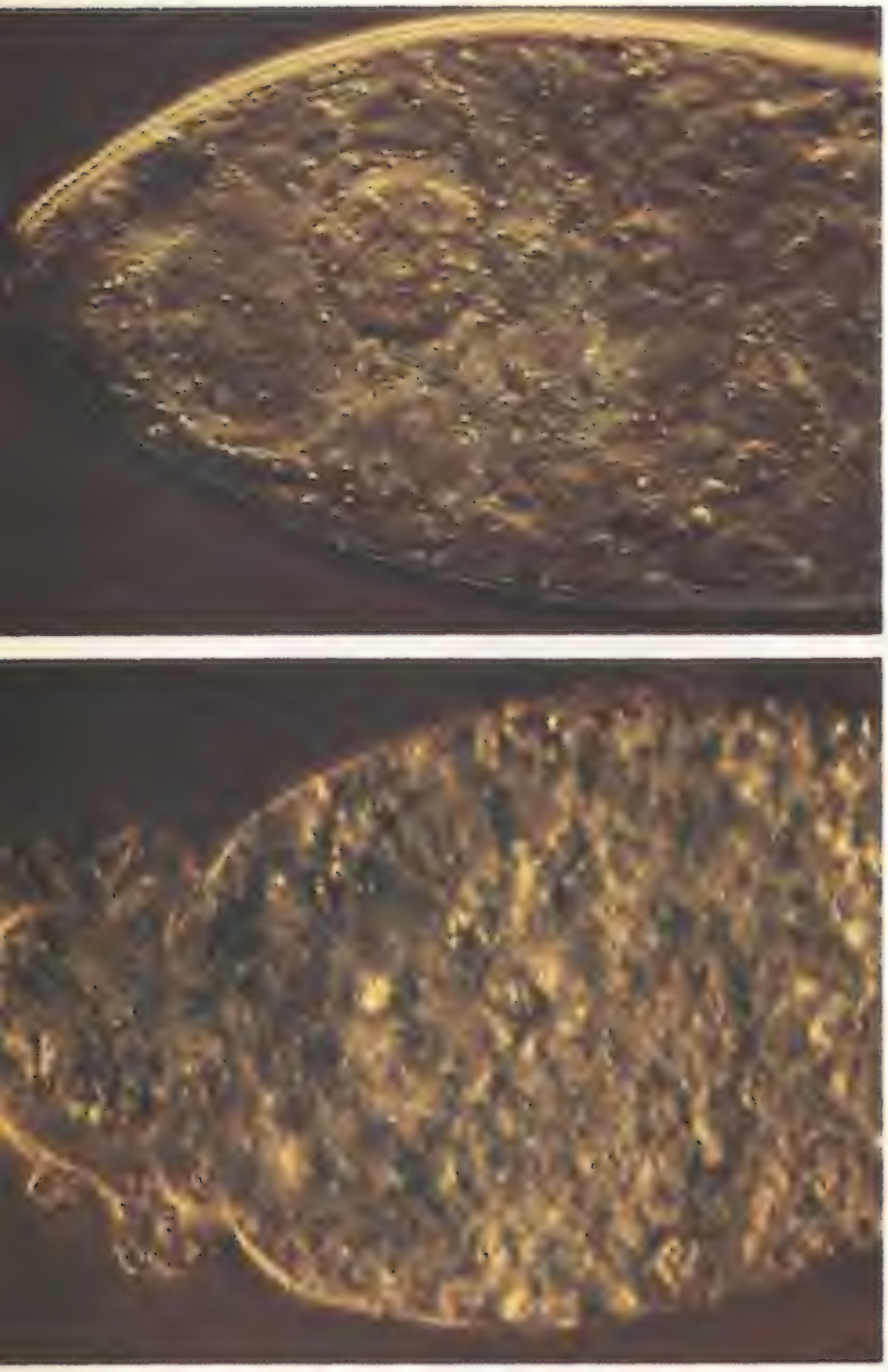


The allergic response: above, a human mast cell; below, the same cell after explosive "degranulation."

Rogue's gallery of pollen offenders appears ominous when viewed through a scanning electron microscope.

Dennis Kunkel/Phototake

In 1966 breakthrough, Kimishige Ishizaka detected and characterized IgE, which causes allergic reaction. Now he is studying how to suppress its production.



Allergic reaction may occur because the body mistakes a pollen grain for a parasite (attack by eosinophils on this worm larva, above, results in its death, below).

system and basophils in the bloodstream. Both these kinds of cells are defenses against foreign invaders. Inside them, stored in granules, are some of the most powerful chemicals in the human body.

With the IgE molecules in place, the stage is set. Now, when an allergen arrives, it reacts with the IgE. The mast cell or basophil reacts in turn: walls of the granules inside fuse to form channels and the chemicals, known as mediators, are expelled into the surrounding tissue. This "explosive degranulation" begins in less than a minute. It is these mediators that cause the symptoms we feel. Blood vessels dilate. Mucus production is accelerated. Muscles around airways contract. One of the mediators even attracts a type of white blood cell, the tiny eosinophil, to the area. These eosinophils, which one researcher has described as "real bombs," arrive ready to blast away at the scene of battle. Their weapons are actually granules packed with protein, which may reinforce the mediators' action. Interestingly, experiments show that these little fighters also attack and destroy certain parasites—for example, worm larvae (left)—which supports the theory that an allergic reaction may be nothing other than the body mistaking a pollen molecule for a parasite.

It is still not clear why some people have more IgE than others, or why we have it at all. "There is no evidence that IgE is essential," says Dr. Kimishige Ishizaka at Johns Hopkins, who first detected IgE in 1966 and showed its role in allergic reaction. More than that, he says humans are lucky they don't have

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more of it in their systems, given its dramatic effects.

The biochemistry and actions of the mediators are subjects of intense research at present. About a dozen mediators have been identified and are being studied in detail. The most commonly known is histamine, which in the past was thought to be chiefly responsible for allergic symptoms. But a recently identified mediator group, known as the leukotrienes, is suspected of having even more potent effects. At Johns Hopkins, a research group has recently detected large amounts of these substances in nasal secretions of allergic subjects undergoing typical hay fever reactions.

Knowing what they know now, researchers are working on ways to block each step in the process. Drug companies are concentrating on finding compounds that will block the activity of leukotrienes as they have already done for histamines. At Johns Hopkins and elsewhere, research is aimed at finding out if it is possible to stop mast cells from being activated—that is, stopping the degranulation in which mediators pour out of the cell. Others are trying to determine if the receptors of mast cells can be modified so that IgE will not bind to them.

The ultimate answer would be to control the body's production of IgE in the first place. Without it, none of the other steps in the allergic reaction could happen. Ishizaka is already studying two substances that affect IgE production. But he thinks it will be a long time before such a substance can be given to an allergy sufferer because of the difficulty in duplicating the complex way the body manufactures chemicals.

In the meantime, today's recommendation for those with allergies sounds remarkably like the one first formulated more than 100 years ago: try to avoid being exposed to what you are allergic to. In these less serene times, unfortunately, elaborate air-conditioning and filtration systems have replaced sea voyages and summers in the White Mountains for most of us. Researchers have found that those allergic to one form of pollen may indeed escape their symptoms temporarily by leaving home; unfortunately, they may become allergic to new pollens. Worse yet, many of those who moved permanently to new areas hoping to escape their allergies succumbed to nostalgic or esthetic impulses and planted fast-growing shade trees or grasses—in essence re-creating the allergenic environment they left behind. Some of those who have made the desert bloom must contemplate their success through a film of allergic tears.

Today, hay fever victims gobble quantities of antihistamines for partial relief. Some find relief in nose drops that shrink blood vessels, although overusing the drops can intensify the symptoms. More serious symptoms may be treated with the powerful inflammation-reducing compounds called corticosteroids, orally or by injection on a short-term basis, or in a form that can be inhaled through the nose. But better days are coming. Allergy sufferers can look forward to making fewer of those tiresome, expensive trips to the doctor's office for shots. And the day may not be too far off when they can go for shots that will inhibit the mediators; in the longer run, we may find a way to suppress the IgE itself. Our bodies will no longer overreact to harmless pollen, and the "little upstart . . . hay fever" will finally meet its match.

Ragweed: sufferers shun this plant at all costs.

Goldenrod: mild ragweed lookalike gets bum rap.

Near Oklahoma City, a pollen collector for Crystal Laboratory clambers through black willow branches.

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Elliott Erwitt's droll 1974 study in contrasts tells more about the owner than it does about her pets.

Observing the dog, photographers see a reflection of Man

Fido is the focus of a captivating new book and exhibition which suggest a dog's life is not always that much different from our own

It has often been said that dogs tend to mirror their masters. An exhibition opening this month at the Dog Museum of America in New York City provides ample support for that. It presents more than 100 pictures, many of which reveal as much about the human condition as about the dog's. The show is the basis of Ruth Silverman's book, *The Dog Observed: Photographs, 1844-1983*, published this month by Alfred A. Knopf.

The dog has remained a ubiquitous presence in photography ever since the use of cameras began in the mid-1800s. Queen Victoria commissioned daguerreotypes of her beloved pets. Dogs romped through Jacques-Henri Lartigue's exuberant snapshots of domestic life during France's Belle Epoque. Almost every photographer of note has taken at least one great picture that includes a pooch.

Created by Dog Museum guest curator Silverman, the exhibit documents the history of photography from a uniquely canine point of view. It also characterizes dogs as more than "a man's best friend." Through the photographer's eye, the animals are transformed into vivid souvenirs of the times—theirs, and ours.

Model of boundless energy, Jacques-Henri Lartigue's Toby leaped high for 1923 snapshot by his master.

Another study in contrasts, black dog with white blaze gave Harvey Stein's camera a good look in 1972.

Strapped for transportation, a dignified dachshund on wheels enlivens 1977 Paris scene by Robert Doisneau.

Anonymous photographer caught this Australian mutt in midair during 1948 training session with baton.

J. P. Hutto's recent portrait of a dog in man's clothing may prove—or does it?—that clothes make the man.

Parisian concierge's terrier was enjoying the balcony view when photographed by André Kertész in 1926.

A pooch witnessed a smooch outside a Paris bistro in the 1960s and Henri Cartier-Bresson got the picture.

Affenpinscher posing as an acrobat for Paul Nadar in the 1890s might prefer being back in the doghouse.

By Jane Howard

Margaret Mead, 'self-appointed materfamilias to the world'

Celebrated and criticized as an anthropologist, she collected, enfolded, befriended, lectured, loved more people than most meet in a lifetime

As a self-possessed three-year-old with ringlets, Margaret poses with mother, Emily Mead, in 1905.

She wasn't beautiful. More people probably wanted to sit on Margaret Mead's lap than thought of her erotically. By turns she could be loving, scolding, ebullient, irksome, heroic and vindictive. Anthropology attracted her in the first place because its borders were so flexible, but even it could not contain her. Nothing could. She made her own rules and lived many lives. She rushed across oceans and continents, time zones, networks and disciplines, knocking down barriers and redefining boundaries. Born the same year Queen Victoria died, she carried the optimism of the 19th century into the chaos of the 20th, with its bewildering infinitude of choices. Those choices, she said, need not leave us feeling flummoxed; this era, for all its peril, is a marvelous time to be alive.

No 20th-century anthropologist has been more celebrated or more controversial. Four years after Mead's death her reputation was as hotly debated as it ever was during her lifetime. The 1983 attack on her first Samoan fieldwork by the Australian anthropologist Derek Freeman (SMITHSONIAN, April 1983) inspired a year of worldwide forums and discussions, and aroused spirited defenses of her career. Her early fieldwork may have been hurried and imperfect, but her generous view of human nature endures and the energy and volume of her later achievements are staggering. So was her sense of family. "We are a family!" she once told a conference of her colleagues. "We will *not* have differences of opinion before strangers!"

As an anthropologist, Mead knew all she needed to know about *moieties* and *affines* and *sibs* and *ujamaa* and *compadrazgo* and other technical terms of kinship, but she won wider attention by talking, in plainer language, of families. The forthright ease with which she diagnosed and soothed the aches caused by families, as so many aches are, was among the most endearing of her charms; the bold and expansive way she defined the word "family"—her own being based as much on choice as on blood—is among the most enduring of her legacies.

A tender woman, she cuddles Galen Yates, grandson of her old friend Lawrence Frank, in New Hampshire in 1959. During World War II, Mead and her family had shared the Franks' Greenwich Village home.

All three of her husbands were anthropologists.
She married Luther Cressman in 1923 in Pennsylvania.

Her sense of kinship began with the Pennsylvania academics who conceived her and bred her and saw her through her childhood as the oldest of five children (one of whom died in infancy). Where it stopped was one of the secrets Margaret Mead kept to herself. The 521 names on her Christmas card list were only the beginning. The ties that sustained her stretched farther and wider and in more directions than anyone may ever know.

The more extended a family was, the better it suited Mead. "Children are having an awful time," she said in 1973, "living in quarreling houses, isolated, scared to death that their parents will get divorced, with nobody to rely on, no extra people, thousands of miles from their grandparents." Of course your family is driving you nuts, she would say, it's a nuclear family, isn't it? The isolated family, she kept declaring, was the worst possible place to bring up a child. One reason so many women in this society got so depressed after their babies were born, Mead said, was that they lived so far from close relatives.

Snapped at Barnard, clowning between classes, were Ash Can Cats Léonie Adams, Mead, Pelham Kortheuer.

One of the New Guinea tribes she studied avoided incest, Mead wrote, not so much because they found it shocking or horrible but because it was "a stupid way of negating, through marriage, the number of people one can love and trust." Her own three marriages all ended in divorce, but they yielded a rich supply of in-laws and were one of the ways she kept adding, all her life, to the roll call of people she loved and trusted. Most people find it troublesome to keep up with their present in-laws, never mind past ones. Nobody could have held it against Margaret Mead if she had neglected her former husbands' relatives, but she always asked her first ex-husband, Luther Cressman, what had become of his brothers. Far from drifting apart from distant relatives and subsequent sets of former in-laws, she energetically sought them out—in rural Ohio, rural New Zealand, aristocratic Cambridge, England, and wherever else she went.

Shipboard romance led to 1928 marriage to Reo Fortune and fieldwork in Peri Village, Manus.

Rendezvous with Gregory Bateson in Ireland in 1934 convinced her to divorce Fortune and marry him.

Three or four times a year, she claimed, she made a new and lastingly important friend, without losing any of the old ones, even those who had died. Recalling how one deceased friend would laugh at this, or how another might have reacted to that, she said "I've lost the pleasure of their company, but I haven't lost them." Supremely confident as a self-appointed materfamilias to the world, she trusted that she knew what was good for people, often better than they knew themselves. She once went so far as to warn a close friend not to have children, on grounds that she thought the friend's husband was a latent homosexual, unsuited for fatherhood. "It was meddlesome of Margaret to tell me that," the friend said 40 years later, having disregarded Mead's advice and having so enjoyed being a parent that she wished she and her husband had raised several children instead of one, "but I forgave her." People were always forgiving Mead.

And they were always seeking her counsel. Sometimes, her photographer associate and former student Ken Heyman remembered, there seemed to be "40 or 50 people around Margaret, all of whose husbands or wives had just left them. The first thing they'd all want to do was go see her right away, because she was the one who could set things right. She was such a busybody, she'd run everybody's lives, but they loved it."

Mead's career as a student of family secrets began at the age of four. Her paternal grandmother, brushing the child's long gold curls, told her stories about some of the subtler aspects of the lives of her parents, referring to them as "Poor Emily" and "Poor Eddie." In some odd way these conspiratorial talks made the little girl feel that she was her parents' parent as much as they were hers. Already, at this early age, she had become "the pivotal family confidante," a role she built on for all of her nearly 77 years.

At the age of not quite 38, with groundbreaking fieldwork behind her in Samoa, New Guinea and Bali and six books and 95 other publications to her credit, Mead gleefully added motherhood to her list of achievements. World War II would soon begin, keeping her busy with government assignments in Washington and elsewhere, but she still managed, with the help of relatives actual and honorary, to orchestrate an unorthodox yet loving childhood for her daughter. By age 50, her name now an interna-

This article is adapted from Margaret Mead: A Life, *to be published this month by Simon & Schuster. Jane Howard spent almost six years on the project.*

tional legend, Mead had three ex-husbands. The first was American archaeoanthropologist Luther Cressman (earlier an Episcopal priest and a professor of sociology). The next two were anthropologists: the New Zealander Reo Fortune and the Englishman Gregory Bateson, who fathered Mead's only child. Mead took the initiative in the first two divorces, but not, to her grief, the third. At last, when Bateson left her, she learned how it felt to be the rejected one. Nevertheless, she cared deeply for Bateson all her life: his photograph was in the hospital room where she died. "As a parent," she once said, "there are only two things you can do: stay alive and love each other."

A spirited variety of people

Shortly after Mead became a mother, she leapt at an invitation from her social-scientist colleague and mentor Lawrence K. Frank to move her small family into the same Greenwich Village house where he lived with his third wife and several children by two earlier marriages. This would assure Mary Catherine of what her mother wished for all children: sustained exposure to a spirited variety of people of all ages. Mead was hardly an indifferent parent. She made elaborate arrangements to have the birth filmed, in 1939, and she brushed her daughter's hair just as devotedly as her grandmother had brushed hers. In Mary Catherine's bedroom was an easel, so that when she woke she could draw pictures of her dreams and talk about them later. But the war was on, and Mead had much to do outside the home: the American Museum of Natural History granted her leave to work on a number of committees and organizations.

For a while in Mary Catherine's early years, it was arranged that most days after school she would report to the home of her parents' friends and Greenwich Village neighbors, Allen and Sara Ullman. The Ullmans' only child, Martha, like Lawrence Frank's son Colin, grew up regarding Cathy Bateson as a sister. "For a couple of only children," Mead once said of her daughter and Martha, "they have more damn sibling rivalry." Colin once carved a cake of soap to look like a cluster of nuts and dipped it in chocolate to give to Cathy and her friends: "I just want you to enjoy," he told them.

Mead could not count on being home from work until suppertime, but she always saw to it that she ate with her daughter. So that Sara Ullman should have a maximum of time to devote to both girls, Mead hired a housekeeper to work at the Ullmans'. "Peace, Queen Esther Victory speaking," that housekeeper would say when she answered the telephone. "God's in His heaven." So He was, in Mead's view, and much that was wrong with the world could be righted if families would only take the trouble to extend themselves, in any way, to encompass others.

She loved to teach—and to be taught in return. Her palms-up pose indicated openness, receptivity.

She was delighted when her pastor friend, the Reverend Austin Ford, moved away from his privileged Episcopal parish in Atlanta, where Mead had been a guest professor at Emory University, to establish Emmaus House, a residence and community center in the black ghetto. On the first of her many sojourns as a visiting lecturer at the Menninger Foundation, Mead asked to board with a simple family offering simple Kansas fare, and was sent, to her delight, to the household of Doris Hunter, a newly widowed young mother of three small children. Her luggage, Hunter remembers, included a blindfold and earplugs so she could sleep through anything if she had to, and a narrow-spouted teakettle which she filled and heated to steam all the curl she needed into her hair, which had not yet gone gray. Knowing her hair was curly, she said, always made her feel better.

"When Wayne would crawl away from her," said Hunter, "she'd sit right down on the floor with her back to him to get his attention." Mead, who had asked those in charge of her Menninger schedule to "keep in mind that my most central interest is chil-

Free give-and-take, as with this group of foreign students at Columbia in late 1950s, stimulated her.

dren," grew so attached to Wayne and his twin sisters and their mother that she insisted on staying with them during return visits to Topeka. Some evenings the roomer would ask her landlady for "a straight drink of Scotch," and Hunter would join her with "a good old Kansas drink from my college bootlegger days: bourbon and ginger ale," and the two women would talk.

"She really turned my world around," Doris Hunter recalls. "I'm not sure whether she was living with us or studying us, probably both. But I'll tell you one thing for sure: I loved her." On one of her later visits to this family, Mead urged Doris to establish the first Halfway House of the Menninger Foundation's Family Care Program. "She always thought the more people the better, the bigger the family the better," Hunter said. "If she hadn't made such an issue of it, I'd never have bought another house big enough to take in from two to five patients, which for me was gold-plated dynamite. Having those halfway people enabled me to support my kids. And Margaret, when she came to visit us there, would refer to herself as 'the other patient.' "

William Mitchell, who had been studying philosophy, decided around the time he met Margaret Mead that anthropology would be a career more to his liking, and all her life Mead did what she could, which was plenty, to help him along. He and his family, like numerous other families of junior ethnographers, became her close friends, and the feeling between them ran deep. There was little she wouldn't do for someone who mattered to her. Often she directed that her lecture fees be funneled into her Institute for Intercultural Studies, organized to help finance field expeditions and other anthropological projects.

"My name can open doors—use it!"

But Mead's generosity went far beyond money. "My name can open doors," she would remind friends who needed to get their children into certain schools, or permission to be married in certain churches, or any number of other things: "*Use* it!" And never mind that they might be imposing on her. "You can only use a person," she told her young clergyman friend Richards Beekmann, who had hesitated to ask a favor, "if you're taking something away from them that can't be replaced, so you aren't using me at all."

When one of her protégés left his wife for another woman, Mead declared that there were two ways of interpreting what he had done: he was either a bastard or, as she preferred to think, he was having an identity crisis. But in acknowledging and eventually befriending the man's second wife, she by no means overlooked the first. "I take on all the people that anybody I love has treated badly," she said. "Wives, sweethearts, discarded mistresses"—feminists might protest that she forgot to refer to discarded males as well—"people dropped by their ambitious friends on grounds of not being sufficiently successful. You don't abandon your children. That's a rule. I can't bear people who drop other people."

Mead tried to explain her philosophy of families in a 1927 letter to her mother. "I dare say it's very irksome occasionally, that I look at my family as impersonally as I look at people to whom I am unrelated but . . . my favorable judgments are also impersonal, and not based on any sentimental theories about blood being thicker than water. I am very fond of my family, as individuals," the letter went on. "I know you have always resented the fact that I haven't cared about my family on the purely accidental count of blood relationship. Unfortunately, I fail to see that blood relationship entitles anyone to special affection. It is fortunate that I happen to feel a good deal of special affection for you all. . . . As far as my feeling for what you and Dadda have done for me, that also is a recognition of the affection and care you have given me as myself; inasmuch as it is given because I hap-

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At 23, she was taught Samoan etiquette by a chief's daughter.

pen to be your daughter, I value it that much less."

Part of Mead's brash genius lay in her skill at making what Freud called "transferences"—shifting the feeling one originally has for a parent or someone else close, with all kinds of possible results, to a therapist, friend or some other important person who appears later. All Mead's life, according to her first husband, she "kept looking for new mothers, to pick her up when she fell, as she did rather often." She needed mothering even when she had become a beaming, disarming, sternly loving grandmother, with a lap that looked ample enough for everyone to crawl onto and be rocked, soothed and reassured that somehow, in spite of the seductive perils of Western technology, all would be well.

She also needed, and kept finding, new sisters. The power of sisterhood, an amazement to some who first encountered it when the feminist movement was reborn around 1970, came

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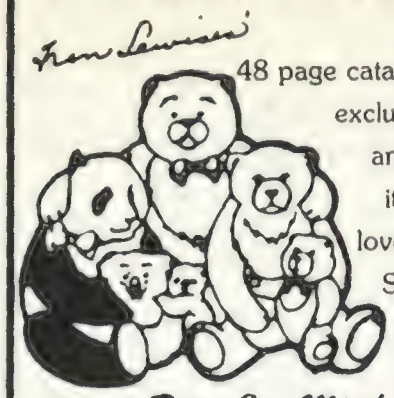

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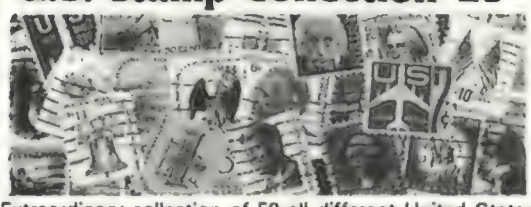

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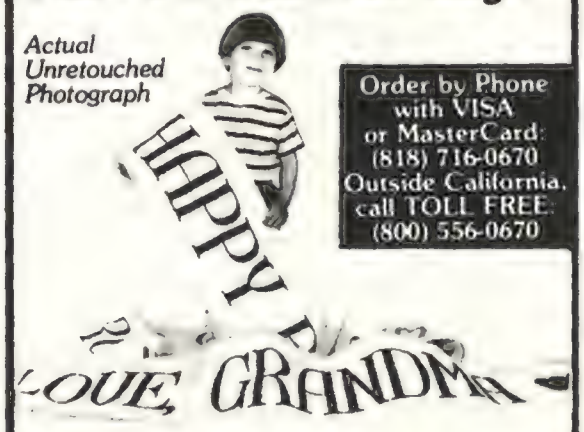

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as no surprise to Margaret Mead. Following her blood sisters came a succession of other groups, all of which she did her best to control, from Barnard College days onward. "Even though she came to Barnard as a sophomore, not knowing a soul," says a college friend, Deborah Kaplan Mandelbaum, "she immediately started mothering everybody." One collegiate family began with a group of girls who had lived together in a cooperative dormitory before Margaret transferred to Barnard from DePauw University in the fall of 1920. "Margaret," her lifelong friend poet Léonie Adams says, "could never accept the fact that this 'family' had existed before she came along." Once Mead joined the group she assumed control, and tried to keep it.

Mandelbaum still has a vivid memory of the "three Ben Franklinish rules Margaret had for getting along with people: 1) be useful to them; 2) be amusing for them; and 3) build them up in their own estimation."

The Ash Can Cats, another informal group that grew up at Barnard, were so called because that was what their professor, Minor Latham, said they looked like when they came to her drama class after they had "stayed up all night readin' poetry." Nothing about the Ash Can Cats was official. There were no passwords, no roll of members, and nobody could have said for a certainty who belonged and who did not. But these undergraduates had an energy, a cohesiveness and a generosity of spirit which any organized sorority might envy.

In the spring of 1925 they had fashioned May baskets, as they did every year, from flowers they gathered themselves at Van Cortlandt Park in the Bronx. According to custom they then made their way all over Manhattan to drop off the baskets, supposedly in secret, at the doorsteps of people they admired. The last basket was left, just at midnight, for Edna St. Vincent Millay, who emerged, exclaimed over the flowers and the

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All children were of special concern to Margaret. Amid a crush of Bali natives in 1957, it was the baby on whom she focused.

thought, and to the group's delight recognized among them her fellow poet Léonie Adams.

Adams, that very day, had learned one of her books was accepted for publication. Louise Rosenblatt, that very day, learned that she had won a fellowship to study at Grenoble University. Mead, that very day, got word of a grant that would help finance her way to Samoa. "Home is where you hang your halo," said a wreath the Ash Can Cats would send her there the following Christmas.

Mead preferred her own inventive sisterhoods to the doctrinaire kind. "If the women's movement has done any harm," TV newswoman Barbara Walters said Mead once told her as they shared a taxi home from a dinner party, "it's to make it seem as if it all were easy. It *isn't* all easy!" The two women had been comparing notes, Walters said, "on how we'd both had some fame and some criticism, both of which are hard to take. We talked about what it was like to live alone and juggle too many lives, and how hard it is to bring up a child, especially a daughter, alone."

"You?" Walters asked. "The most independent woman in the world? *You* have such thoughts as these?"

Yes, Mead nodded, she had such thoughts. But she inured herself in later years to the hostility she sensed from men, mostly from those in her profession. "Men who would never begrudge success to women bicycle riders, women opera singers, women jugglers," she said, "begrudge it to me. Especially when they're drunk, they come to me and say 'You have it all. It's not fair.' "

Between 1917, when Mead was first engaged, and 1950, when her third divorce was final, she was always attached to a man as well as to her work. A husband, after all, was a convenient thing to have, especially in the first half of this century. One of the reasons she got engaged at 16 to Cressman, then bound for theology school, was to afford her "more time for deep, creative friendships with women"—among them not only Ash Can Cats but Ruth Benedict, who along with Professor Franz Boas introduced Mead to anthropology. Just before she sailed for her first fieldwork in Samoa, she wrote a letter to her husband, Cressman, on his way

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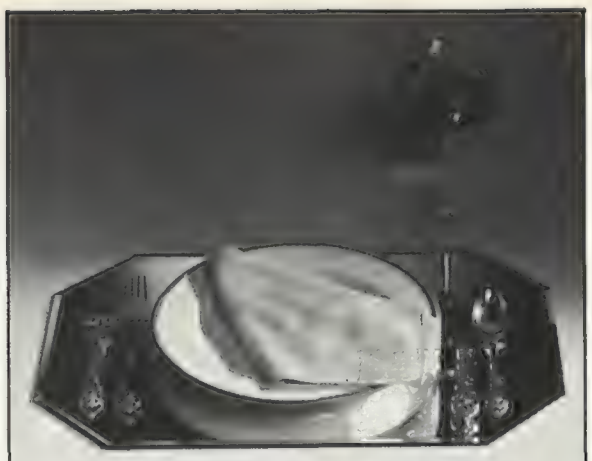

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Lifelong friends, the Ullmans, were parents of her goddaughter.

to a year's fellowship in Europe. The letter said he ought to feel free, during their separation, to look for a new partner. At first he was startled and hurt, but in England he did find somebody new, and so, during that same interval, did Mead.

She had no thoughts of meeting anybody exciting as she sailed from Sydney toward Marseilles, where she was to reunite with Cressman. Her fellow passengers, at first, seemed a dull bunch, unlikely to lure her from working on her field notes. But there, among them, was Reo Fortune. A compellingly handsome young New Zealander, he was bound for graduate work at Cambridge University in psychology, the same discipline Mead had almost made her own lifework. Their shipboard romance was so intense that Fortune almost persuaded Mead to go on with him directly to England instead of joining her husband. She didn't, but the following summer, after a tryst with Fortune in Germany (on the pretext of seeing Oceanic art in museums there), Mead arranged for her first divorce.

In 1928, another ship took her to New Zealand, where she married Fortune and continued with him for her second South Seas field trip. Not the least of his attractions was that he had become an anthropologist himself and done remarkable solitary fieldwork, which would lead to his esteemed book *The Sorcerers of Dobu*. Had all this happened 50 years later, Mead might have advertised for an ideal mate in the idiom of the

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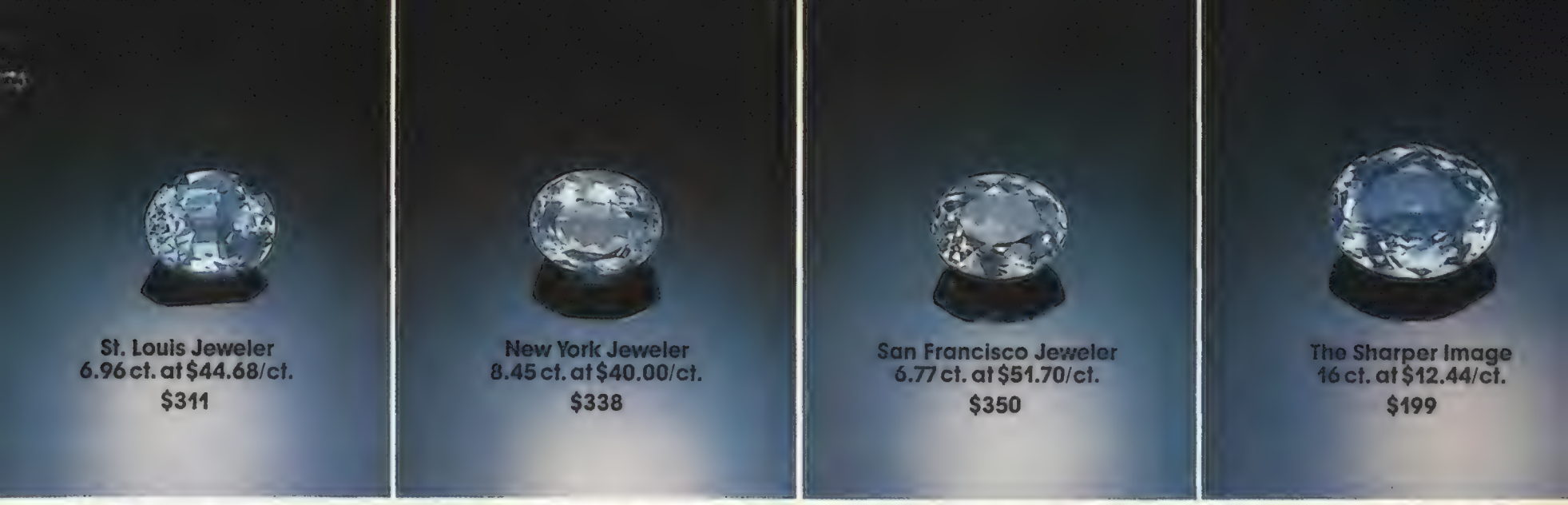

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Mead was an adoring mother to her daughter, Mary Catherine Bateson.

New York Review of Books personal classifieds, writing: "DWF, 27, PhD, bent on global renown, seeks ethnographer husband for extended field work in malaria-ridden tropics. Must be expert climber, linguist, photographer, marksman. Knowledge of classics and psychology helpful, paternal ambitions immaterial." Mead, at this point, believed she could never have children. Fortune, who never wanted to, would have met her specifications exactly.

They worked together among Melanesians on the island of Manus and, later, among American Indians in Nebraska. Goaded by his ambitious wife, Fortune wrote three fine books, but *Coming of Age in Samoa* had made Mead world famous well before she was 30, and he could not match the pace she set. They went back to New Guinea, studied two more tribes, got along worse and worse, and over Christmas 1932 encountered Gregory Bateson, another young anthropologist whom Fortune had known and rather envied at Cambridge. Bateson, who that year had been studying New Guinea tribes himself, was as hungry for shoptalk as Mead and Fortune. For a grim time—"the closest I ever came to madness," Mead would call this period

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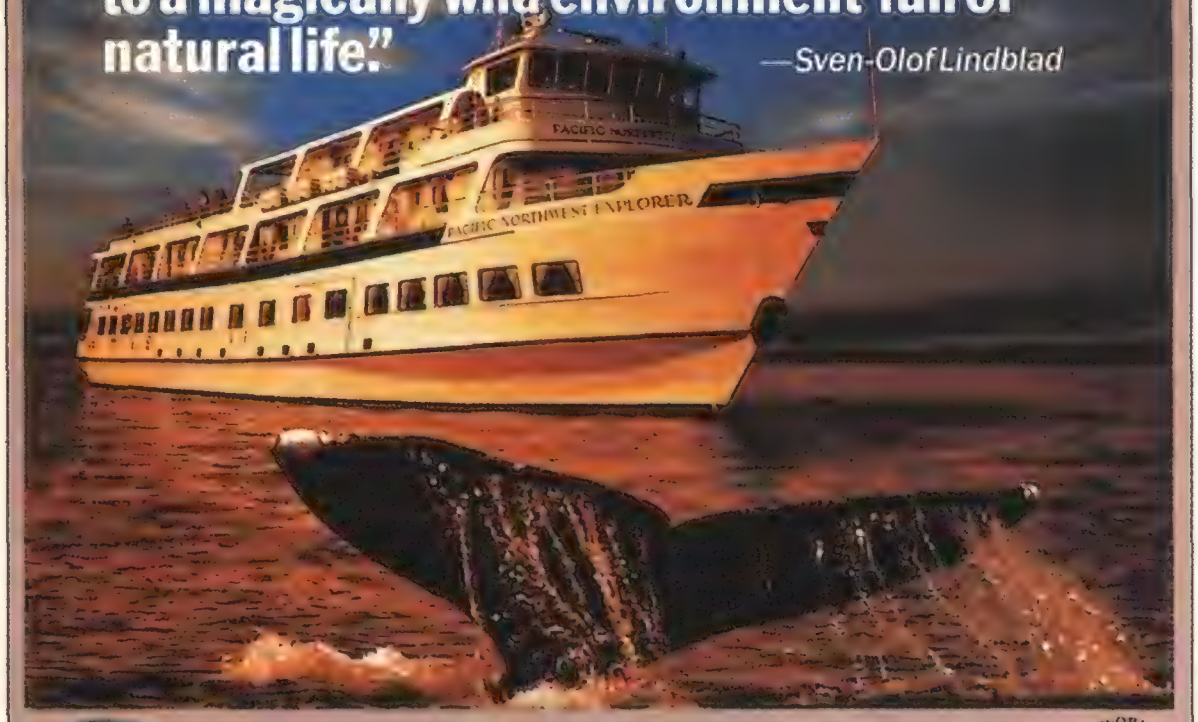

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—the three young ethnographers worked with neighboring tribes along the Sepik River. A romantic triangle evolved, with Mead at its apex and Fortune the loser. At the end of their fieldwork, all three went home: Fortune to New Zealand, Bateson to England and Mead to New York.

Just as she had traveled to Germany in 1927 to make sure she really wanted to leave Cressman for Fortune, so she went to Ireland in the summer of 1934 for a reunion with Bateson. Returning, Mead took steps to divorce the New Zealander and to devise an elaborate, largely clandestine scheme to find some anthropological project she and Bateson could work on together. They talked about it more when he visited the United States in the summer of 1935. Finally, a year later, they met in Batavia—just by coincidence, she implied in the letter that broke the dramatic news to her parents—married in Singapore and got busy collaborating. They worked first in Bali, in the late 1930s, on filming and other new ethnographic methods, and, next, in the United States, on applications of social science to international crises.

But after the war their paths diverged to the point of divorce. "I couldn't keep up with her," Bateson said of Mead, which was more or less what Fortune and Cressman had said before him. But they still had many shared interests, most notably Mary Catherine, now a professor of anthropology at Amherst College, who in 1969 presented them with a grandchild, Sevanne Margaret Kassarjian.

Having adored her own grandmother, Mead doted on Vanni, as the child was nicknamed. The new status of grandparent pleased her more than any honorary doctorate or other award ever could. She also relished being many times over a godmother, an honor she did not take lightly. When any godchild needed her, she made a point of being available. In 1957, when Martha Ullman suffered her first youthful heartbreak,

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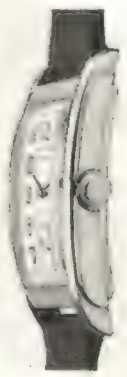

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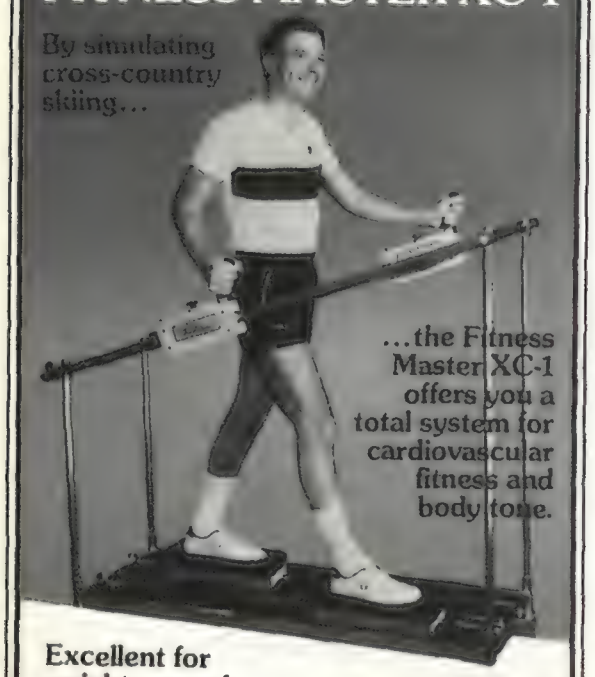
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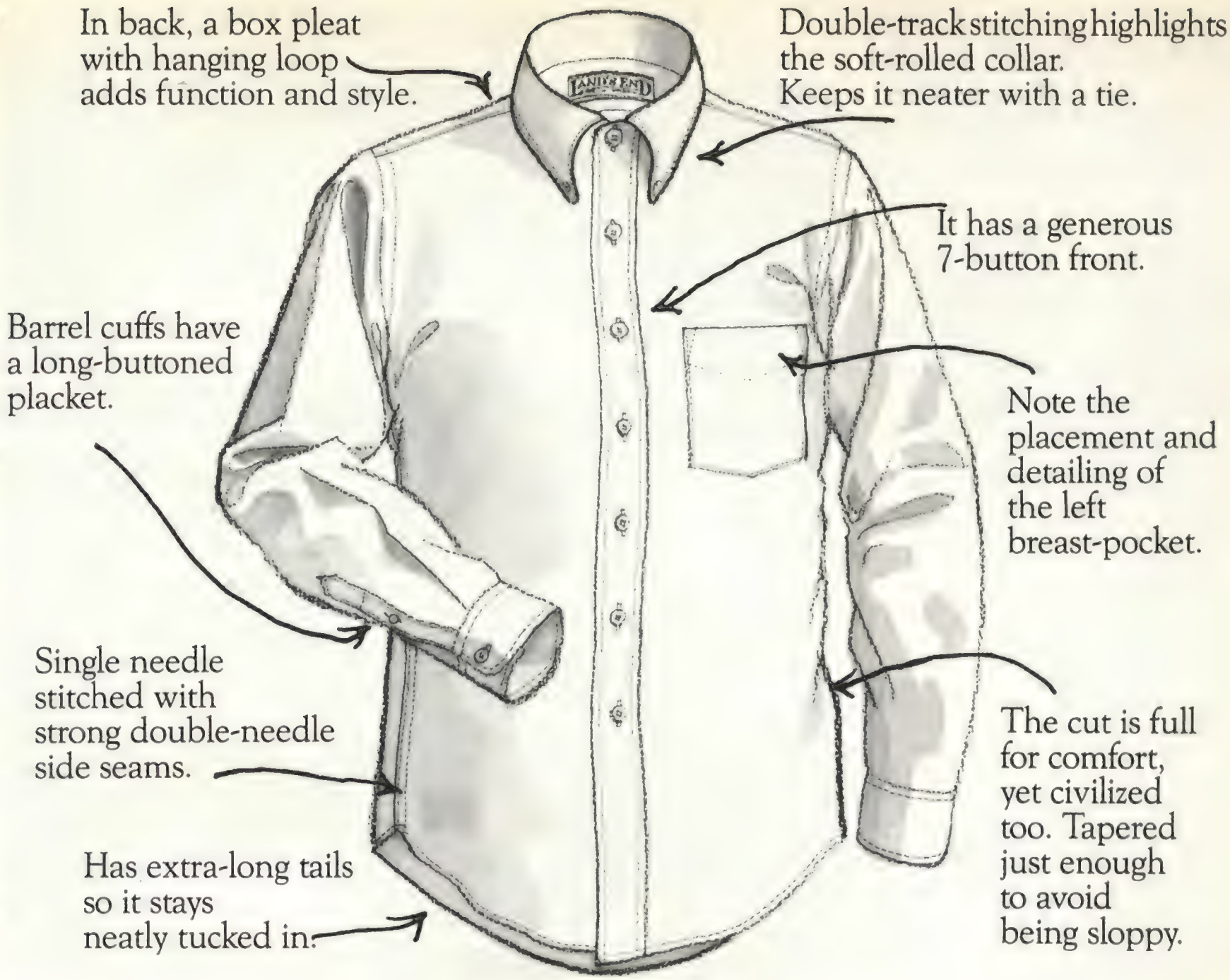
In 1959, during one of many summers with friends in New Hampshire, she sits serene in the stern of a rowboat powered by Kevin Frank.

her godmother Mead assuaged her grief by canceling her own plans in order to give the girl a restorative lunch of egg rolls and vin rosé, and sent her off with the illuminating journals of Virginia Woolf and Katherine Mansfield.

Women, Mead seemed to feel, needed more protection than men did. She operated much of her own life, and certainly her office at New York's Museum of Natural History, very nearly on an all-female basis. She relied especially on social worker Marie Eichelberger, a friend since Barnard days, to help manage her business affairs, and on anthropologist Rhoda Metraux, whom she met early in World War II, for collaboration in her voluminous writing. (After Mead and Metraux were both divorced they also lived together, for more years than Mead ever lived with anyone else.) Generations of young women, some who jokingly called themselves "Meadettes," were trained by Eichelberger and Metraux to help smooth their boss' increasingly complex way through the world. Many Meadettes claim that this training taught them more than they learned in graduate school.

At the museum, Mead was thought to be formidable. "Before I went to work for her there," one employee said, "I was warned that I would probably have a nervous breakdown, and it was easy to see why. Doors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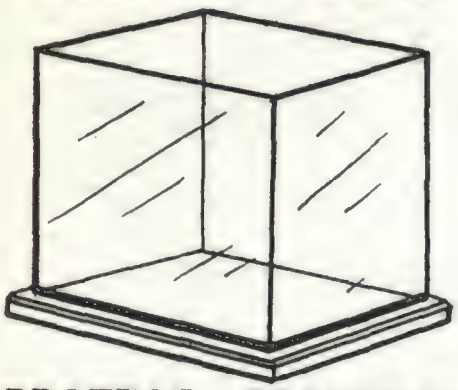

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She could be a tartar, especially to staff in cluttered tower office at Museum of Natural History in New York.

would slam, secretaries would weep, often there was someone in the hallway sobbing. At times I could smell the tension in the tower before I even climbed the stairs to get there."

One Monday noontime in 1946 an angry woman stormed out of the southwest tower and down to Columbus Avenue to have lunch, alone. She was fuming. Margaret Mead, who had given her five books the previous Friday and told her to read them sometime, had just now yelled at her for not having finished all five over the weekend. Who did Margaret Mead think she was, a flunky?

Mead, of course, was well aware of the talents of Frances Cooke Macgregor, whom she had persuaded to help with the analysis of thousands of still photographs that Gregory Bateson had brought home from Bali. Macgregor was a medical photographer, uncommonly well versed in sociology and anthropology. She was about to start work toward a doctorate in sociology when Mead, whom she had just met that spring, said: "A book with me will do you a lot more good than getting a PhD."

"I gave her 1,000 pictures of Bali," said Mead, "and shut her up in the tower for three days and she came out with an analysis of Balinese hands."

But on that particular Monday morning Macgregor learned that even prized members of Margaret's coterie were not exempt from her stormy temper. "She didn't yell at *me* until that day, and I didn't know

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the reason she was so red in the face was that she really was mad at her secretary—not at me."

After lunch, back in her office, Macgregor was still brooding when Mead came in "with her arms crossed, like she did, and a little-girl face, asking 'Are you unhappy?' "

The level of excitement was always high in the southwest tower of the museum, no matter what Mead's mood was. Her brain, Macgregor recalls, was "like a calculator, spewing out ideas. She was in a commanding position, committed to the idea that the concepts of anthropology were something the world should know about. No matter what tears and tantrums went on in that tower office, an air prevailed that everyone there was just dying to help Margaret, no matter in how menial a capacity. Sometimes one would boast: 'I just picked up her things from the cleaners!' "

But for all that she overworked, championed and depended on her own sex, Mead did not like being referred to as "the greatest *woman* anthropologist," nor was she pleased when the young sociologist Margaret Cussler offered to dedicate to her a book called *The Woman Executive.* "No," Mead said, "they think I'm too aggressive anyway." Who "they" were she did not say, but it was clear that she craved their approval.

Craving public approval, she must have known perfectly well that the public was speculating about her private life. How not? Other people's personal lives were such a running theme in what Mead wrote and said that concupiscent guesses, however inaccurate, were bound to be made about her own. Her three divorces, for example, suggested to some that she must be a homewrecking vamp and to others that she really might not care about men at all. "What is new is not bisexuality," Mead wrote in one of the last columns on which she and Rhoda Metraux collaborated for *Redbook*, "but rather the widen-

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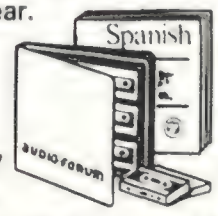

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Conferences, as in Vancouver, 1976, were the staff of life to Mead. Thumbstick, adopted following an accident, became her trademark.

ing of our awareness and acceptance of human capacities for sexual love." "If she had a choice," said Leo Rosten of Mead, his wife's sister, "I always thought she'd rather exchange ideas than kisses." And Mead herself once said, "The main reason for getting married is that married people have a chance to finish their conversations."

For the exchange of ideas, however, Mead knew of no sublimer forum than the conference. Other eyes might glaze over at the prospect of days in smoky rooms with sealed windows, of plastic badges, of endless panel discussions, but Mead's did not. Conferences, for her, seemed a high-blown species of that splendid ritual, the family reunion. Each offered a possible supply of exhilarating new cousins. She might meet the oceanographer and demographer Roger Revelle, the visionary architect Buckminster Fuller, the British economist Barbara Ward. Conferences were a way for her to help the world confront itself and, perhaps not incidentally, to avoid self-confrontation. At conferences, cloistered for several marvelously focused days, exempt from the constraining routines of academia and home, she was free to grapple with cosmic issues.

She was also practicing a habit she had formed in childhood, upon entering a new classroom or any other new environment, of "finding my place in the constellation and finding the people who would fit the different roles." Who, if anyone, would be the enemy? Who would need her protection? How did everybody else fit in? In the same methodical spirit, on her return to the United States between her second and third marriages, she had assessed the cast of characters in American social science to determine which ones she most wanted to work with and how her interests might mesh with theirs. She discovered so many new professional niches that she began to think, as she wrote in 1933, that "the only possible way to see one's friends is to be on the same committees with them."

We are talking here about a truly brilliant career, about someone who picked and chose with exquisite skill: this from here, that from there. Goodbye, see you next year. Hello! Yes, it's me, with my cloak and staff [since an ankle fracture in 1960, her trademark

was the forked "thumbstick" she used instead of a cane], just back from São Paulo or Moscow or Delhi. Who else can give you what you can get from me? Who avoids resentments, cliques and cul-de-sacs of hierarchy in moving between organizations better than I do? Cults and factions won't do. Everybody stay in this room till we've talked things over. I'm here as an associate from another field; how can I be a threat? Shall we have coffee? A martini? You look as if you could use a friend, you poor brilliant young man. Let's talk, and maybe you'll become part of my network.

It was Mead's custom to develop networks wherever she went. On field expeditions, each member of her domestic staff gave her access to a different network of families. Every committee and council Mead belonged to at home might lead toward who knew how many more and fruitful associations and networks. Networks, it might be said, are an evolved species of family.

Mead's fellow anthropologist and friend Philleo Nash, now a cranberry farmer, once director of the Bureau of Indian Affairs and Lieutenant Governor of Wisconsin, referred to such networks as her "alternate academy—a large number of individuals with whom she kept in constant touch by phone and mail, a wider array than any other scientist or politician or writer had access to." He also referred to these networks as her "Maypole Conspiracies." He meant an assortment of organizations, each of which might or might not know anything about the others, but whose activities, however unwittingly, all served the same grand aim. Mead's aim was for us all to hasten to become not only our brother's keeper, but the keeper also of our neighbors, our countrymen and, in due course, of our enemies. To become our enemy's keeper as well as our brother's was "something no men on earth have as yet learned how to be.

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And when we have learned, a new grade of evolution will be reached. For the relations between such peoples, who are of necessity the keepers of each other's children, no words that now exist will be wholly appropriate."

No mortal could honor the claims that arose from all the farflung organizations in Mead's Maypole, but with legendary stamina she tried. As time went by, she was in such constant motion that some who cared for her wondered whether she could stop if she wanted to. Staying so peripatetic, and keeping in touch with so many families of all kinds, as one friend said, "may have distracted Margaret from a pretty poverty-stricken life. Being a cast-iron monument and having all those friendships kept her busy, but after a few drinks she would relax and sometimes weep for the loss of Gregory."

Mead's view, her philosopher friend Jean Houston said in summing up her thinking, was that it was "all a question of citizens' volunteer associations, bands of angels, of loving, empowered, celebrational communities." It was also a question, as Mead sometimes put it herself, of "evolutionary clusters," only "she wasn't just a clusterer," as Houston said, "she was a swarmer."

Tales abound on many continents of the good that Mead's life did for other lives, but her friendships were on her own terms. She "took care," as June Goodfield wrote in the *Bulletin* of the New York Academy of Sciences a few months after Mead's death, "that no one came too close and even those fascinating books, *Blackberry Winter* and *Letters From the Field*, left unsaid as much as they revealed . . . she was pervaded by deep loneliness, and although she never admitted it, she was very vulnerable too. She cared immensely and gave generously, often to the point of being drained and impatient, but she rarely sought support. Everyone was her neighbor in the Biblical sense, yet she demanded far too much from those close to her."

She reconciled herself, in any case, to a life of constant good-byes, rewarded by the hellos that followed. The last thing anyone could ever have accused Margaret Mead of doing was wearing out her welcome. She was always eager to get out of here, however appealing "here" might be, and on to a new city, a new discipline, a new family, to provide abrupt and refreshing contrast with the one before.

"Receive her into the arms of Thy mercy," the program read at Mead's memorial service in November 1978, "into the blessed rest of everlasting peace, and into the glorious company of the saints. Amen." Yes. Receive her, cradle her, hold and enfold her. And the larger the company, of saints as of mortals, the more pleased Margaret Mead will be.

By 1971 a doting grandmother, Margaret wrote that through Vanni came the realization that "access to both grandparents and grandchildren [makes one] a full human being."

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THE ONE TO WATCH

Book reviews

Living the Sky: The Cosmos of the American Indian
Ray A. Williamson
Houghton Mifflin, $19.95

Archaeoastronomy burst into full flower a little more than ten years ago, bringing fresh excitement and valuable new insights to investigations of past civilizations. The young discipline has been tested at sites around the world with results that are often controversial, always stimulating and, in an increasing number of instances, highly persuasive.

This book introduces the reader to the origins and methods of archaeoastronomy and provides fascinating accounts of recent research. As indicated by the subtitle, the main focus is on native American peoples—chiefly those in North America—and the possible astronomical significance of their prehistoric structures, wall paintings and artifacts.

The author, Ray Williamson, has done extensive research on this subject (his article, "This continent's first astronomers—native Americans," appeared in the October 1978 SMITHSONIAN). He began his career with advanced degrees in physics and astronomy, sciences which are essential but not in themselves sufficient to unravel the mysteries embodied in the incomplete, enigmatic remains of ancient cultures. The myths and traditions of living native Americans are also very important. Indeed, as Williamson points out, the oral histories preserved by numerous peoples give archaeoastronomers in America an immense advantage over their colleagues working in the Old World, where the builders of megalithic monuments have unfortunately vanished without a trace.

Williamson demonstrates his case by presenting a wealth of Indian lore relating to the skies, placing it in the context of proposed calendrical alignments at various sites. He has made liberal use of observations, analyses and hypothetical accounts, always carefully identifying each for what it is. The chapters are fully referenced with a bibliography and footnotes for the benefit of scholarly readers who wish to pursue the subject further, but the text as a whole, with its clearly readable, anecdotal style and wealth of photographs and drawings, will make an immense appeal to lay readers. Here, at last, is a handsome and reliable guide to engrossing material that is usually scattered through journals, magazines and news items.

Much of the text is devoted to the Pueblo cultures and the Navajo of the Southwest, and the Plains Indians whose ancestors may have built the great medi-

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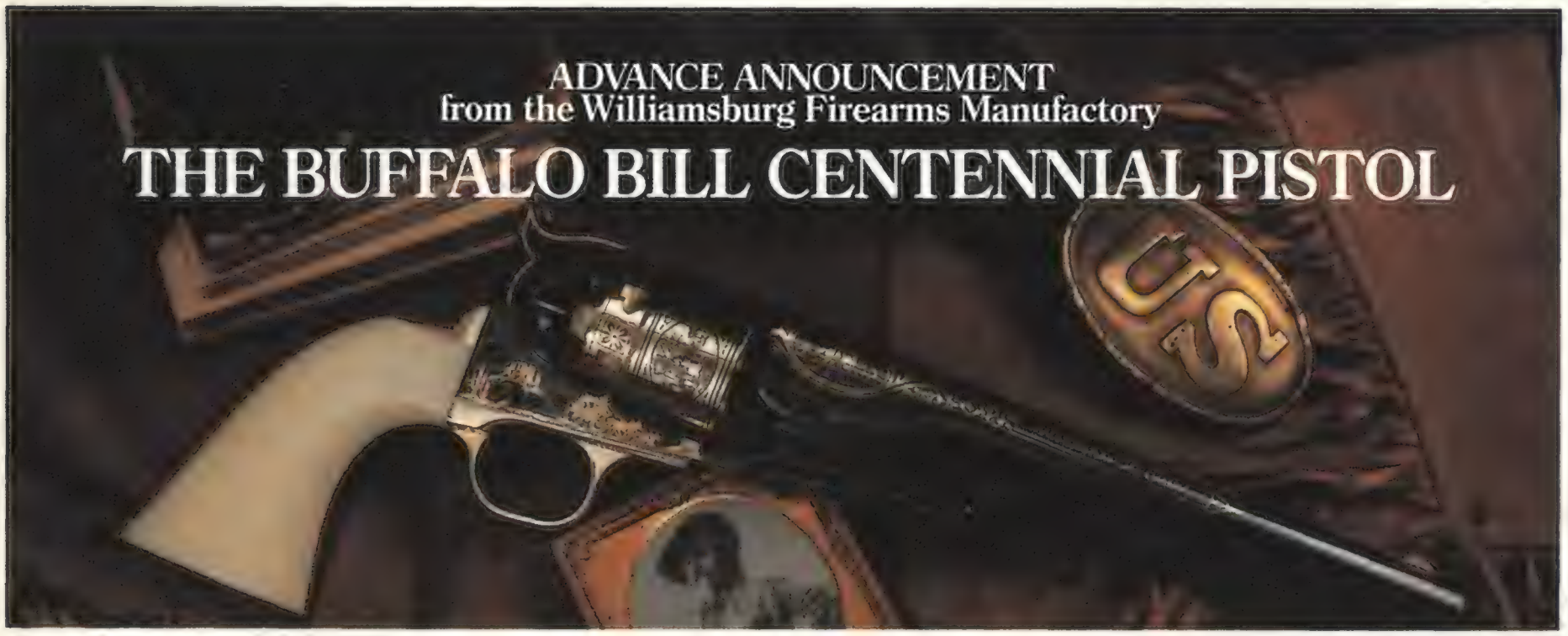

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Rock painting of star, hand and crescent moon in sandstone alcove in Chaco Canyon, New Mexico, may represent supernova seen in 1054.

cine wheels such as the spoked structure, 25 meters in diameter, that lies on a high slope of the Bighorn Mountains of Wyoming. A wide geographical and cultural range of other sites is also described, including rock shelters in Baja California; the Cahokia mounds with the remarkable "American Woodhenge" of East St. Louis; the Incinerator Site (narrowly saved from being flooded with sludge-treatment ponds) near Dayton, Ohio; the Crystal River shell mounds and sculptured stone pillars of northwest Florida; and the stone chambers (or root cellars) and standing stones of the Northeast. Williamson reports that the structures in New England are subjects of such heated controversy that serious amateurs and professional archaeologists are not talking to each other about them—even during rare instances when both groups are in the same room.

A highlight of the book is Williamson's account of certain rock paintings of the Southwest that appear to depict the brilliant supernova explosion of A.D. 1054, the precursor of the rapidly expanding, red-rimmed crab nebula visible through telescopes today. The sudden appearance of a bright "guest star" was recorded late in June in Japan and on July 4, 1054, in China. It remained visible by daylight for 23 days and by night for nearly two years. Until 1978 no other written records of this event were known, although this dazzling display occurred high in the sky where it could have been seen by everybody in Europe.

Perhaps this tells us that European skies were overcast for endless months in 1054-55. It can hardly indicate a period of intellectual darkness, because European observers did record a less prominent supernova, low over the horizon, in A.D. 1006, and the great comet of 1066. A single record from the Near East was brought to the attention of archaeoastronomers in 1978 by two Israeli medical

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historians, who happened to see an article on this subject in *Newsweek*. They cited a passage written by a doctor, Ibn Butlan, describing a great plague in Constantinople and Egypt that accompanied the appearance of a bright star in Gemini from April 1054 to April 1055.

At the same time, the native Americans of the arid Southwest were recording this spectacular event in a different medium. Since 1955, a number of rock paintings or pictographs have been found at sites from California to Texas showing a starlike object close to the crescent moon. Probably the most beautiful example was discovered in the 1970s in Chaco Canyon, New Mexico. There, high above the ground, the crescent, the star and a human hand (symbol of sacredness) are painted on the undersurface of an overhanging rock layer (p. 143). Computer calculations show that on July 4, 1054, the waning crescent moon passed within 2 degrees of the supernova. Surely the inveterate sky watchers of the desert reproduced this unique and stunning spectacle!

Williamson points out, however, that because none of the crescent-star representations has been accurately dated, their significance is in dispute, as is that of the majority of petroglyphs. Another kind of problem for all who wish to enjoy or to decipher the meaning of such precious and irreplaceable relics of human handiwork is a rising tide of theft and vandalism which threatens to destroy them. Williamson has found wall paintings that have been used for target practice.

The title, *Living the Sky*, refers to the many sky-related rituals that have become part of the daily lives of peoples existing in harmony with the natural world. The sky, with its sun, moon, stars and planets, its meteors, comets and rare novas and supernovas, its storms and rainbows, presents the grandest spectacle observable by humans. This book documents the richness of the lives of those attuned to observe the sky, and reminds us of how our lives diminish when we lose that capacity.
Ursula B. Marvin
Smithsonian Astrophysical Observatory

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commissioners descended upon a jewelry store and warned the proprietor that unless he removed an offending sign from his window, he would be fined $1,000. The sign read: "Merry Christmas." And in the Quebec metropolis of Montreal, near the border of Vermont, police seized 15,000 Dunkin' Donuts bags. The sign and the donut bags were printed in English only, and that's illegal these days in Quebec, where French has been declared the official language.

The language fuss is one of several Canadian oddities noted by Mordecai Richler, whose novels (such as *The Apprenticeship of Duddy Kravitz, St. Urbain's Horseman, Joshua Then and Now*) and magazine pieces have made him perhaps Canada's best-known writer in the United States. Montreal is Richler's hometown, and he is bemused to see that the Bagel Factory of his boyhood is now La Maison du Bagel, and the Talmud Torah school where he studied Hebrew has become the Ecole Primaire Nazareth. He finds this faintly entertaining, but *Home Sweet Home* is not another Richler comic novel. It is a collection of articles and essays, some of which take a sharp look at Canada, and Richler, on the whole, is not pleased by what he sees.

"For these days," says Richler, "disenchanted Canadians no longer believe in anything, least of all themselves. This endearing northland, perennially richer in promise than in fulfillment, is not merely ailing, it's in real danger of flying apart." Indians and Eskimos protest that they are a colony of white Canada, the West resents the East, the French Canadians threaten to secede, nationalists fret that the country is merely a branch plant of the U.S. economy, and the Russians, he laments, now play better hockey than Canadians do.

Like many Canadians, Richler exaggerates the problems. Indeed, the American futurist Herman Kahn once scoffed that Canada's problems are imaginary; the place is simply "neurotic," said Kahn. Richler concedes that the country will endure, and "tomorrow they will flock to the new and golden cities of the North as they do now to California. Tomorrow Winnipeg will bedazzle like Byzantium. Meanwhile, it's cold."

Richler has a nice enough eye and ear for detail as he explores the hinterlands, but his writing sharpens when he turns to

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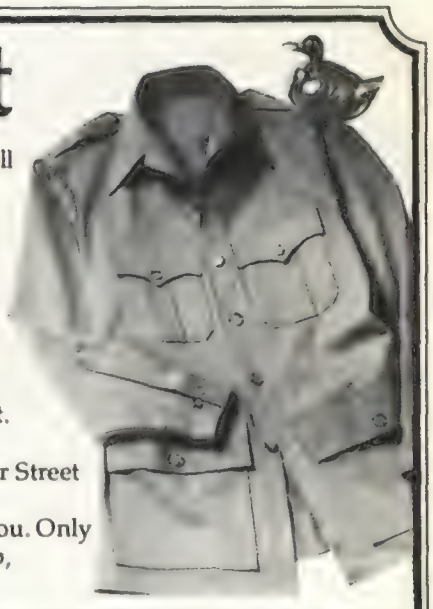

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Hollywood (his screenplay for *The Apprenticeship of Duddy Kravitz* was nominated for an Oscar), or baseball or tells of touring the U.S. talk-show circuit to promote his books ("Today . . . we have with us the great American novelist Irving Stone; one of the world's ten best-dressed men, actor George Hamilton; and a writer from Canada"). His warmest recollection is of his father, a loser who worked in the family scrapyard.

What Richler is not good at is judging his own material. Some of the reprints in *Home Sweet Home* are mediocre reportage, or yawningly out of date or both. Is an 11-page account of a body-building contest in 1960 really a subtle examination of the Canadian psyche, or is Richler just ransacking his files for anything he can recycle?

Still, Richler's writing at its best ranks right up there with his list of Canada's prime cultural exports: Deanna Durbin, the musical score for *Hair*, Louis B. Mayer, Superman. . . .

David Lancashire
The Globe and Mail
Toronto

Ceremonial Time: Fifteen Thousand Years on One Square Mile
John Hanson Mitchell
Anchor Press/Doubleday, $15.95

There stands, plainly visible from the highway west of Boston that I travel regularly, a low hill I'd never noticed. According to John Mitchell, who dwells in a century-old farmhouse on its flank, it is a drumlin shaped "very like a whale."

That is perhaps the least of what I had overlooked about the mile-square area around Mitchell's home, "a crowded, rural area in the process of becoming a suburb" to the undiscerning eye. Naturalist Mitchell has seen much further into the present, past and future conditions of this fragment of Massachusetts called Scratch Flat in *Ceremonial Time*, his wondrous and wondering, if not wandering, journey in place.

Mitchell began his dreaming while prowling the whale of a hill, the nearby brook, bog, farms and landmarks more recent—highway, factories and housing developments among them. He came to know, it seems, all Scratch Flat's residents, animal and vegetable. He cleared around secondary forest growth, foraged for hog peanuts and groundnuts barehanded,

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broiled pond turtles and cultivated his garden in brief attempts to live off this land. And in a longer quest to understand its life, he cultivated the friendship of those who knew it even better: farmers, laborers, Wampanoag Indians.

But what made Mitchell a time traveler was the unknown he had begun vaguely to sense in his prowls about Scratch Flat, the ceremonial time honored in name and deed by Indian guide Nompenekit ("Man Born Twice") when one feels "a heightened . . . perception of the way things must have been."

I've yet to feel a keener awareness of how things might have been at the end of the last Ice Age, as Mitchell and a geologist friend scour Scratch Flat uncovering "the actual footprints of the glacier as it tracked back . . . flushing its icy toilets [moulins] all the way."

The quaking bog, "as close to tundra as you will find in Massachusetts," is where Mitchell brings us to meet the woolly mammoths, other giant denizens of the larch swamps and the Paleo-Indians who chased after them. Through Nompenekit and friends, and the observation of their ceremonies, Mitchell brings us a whiff of the fires that burned in the wickiups of the archaic people who followed, the eastern woodland agriculturalists who preserved Scratch Flat until the apple farmers, the "quiet yeomen" of Kent, supplanted them.

Now, in another transition far from smooth in life, the last of the farmers of this fertile soil are giving way to developers. From this too swift current Mitchell has rescued scores of fascinating characters past and present: Scottish adventurer Hugh Sinclair, a theoretical visitor to Scratch Flat in 1399; Mary Louise Dudley, suspected witch of 18th-century Scratch Flat; Uncle Peter Hazzard, renowned black fiddler of the last century; and Peter Sarkesian, computer wizard and "guide to the new age" for an industrial-residential neighborhood that few of its residents now realize ever had the name Scratch Flat.

Having traveled through *Ceremonial Time* I will not forget Scratch Flat. I will, at the least, slow down as I drive by and admire its drumlin, as with new eyes I view my own neighborhood.

Don Lessem
Naturalist and writer for *Worcester Magazine*

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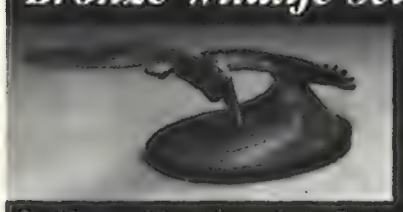

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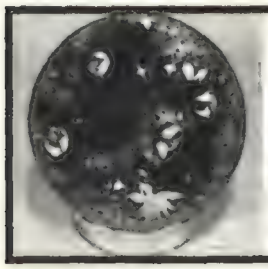

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INCOMPARABLE ADVENTURE
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1974-1984 10 YEARS

Appearances of the Dead: A Cultural History of Ghosts
R. C. Finucane
Prometheus Books, $18.95

The stairs creak with footsteps. The chandelier starts to sway in no noticeable breeze. The dog growls in its sleep.

Today, of course, reasonable people do not believe in ghosts, so events such as these are not perceived as meaningful, much less as caused by an ectoplasmic visitor. But then what do we say about our ancestors, who thought that ghosts *do* exist? Were they fools?

To say so would be to admit one has failed to understand our forebears. The study of history aims to show us why the beliefs we now reject were at one point obviously true. To do that requires showing their cultural context. This is R. C. Finucane's goal, with ghosts as his subject.

Finucane starts with the ancient Greeks and Romans, but really hits his stride with the Middle Ages (he is the author of two books on that period) when "the living were quite used to rubbing shoulders with the dead." Medieval ghosts "perform functions that seem to be especially associated with doctrinal teachings of the Church," such as warning the living of the value of confession. He then shows how the Reformation's denial of purgatory changed the understanding of where ghosts come from: "Protestant apparitions could only be demonic, angelic, or illusory. They could not be spirits from purgatory."

In the Enlightenment, belief in ghosts became "unfashionable among the learned classes." With the growth of science and the sway of reason, ghosts changed appearance and function. They, like all else, had to be eligible for scientific investigation to be acceptable at all.

The book is thought-provoking, informative and worthwhile, yet also slightly unsatisfying. The explanations of the changes seem perfunctory; we do not get much of a sense of what death and the presence of the "otherwordly" meant to the people who believed in ghosts. Perhaps this is because of Finucane's lightness of tone.

Still, *Appearances of the Dead*, chockablock with examples, is generally well done. And not the slightest bit spooky.
David Weinberger
Writer and critic on philosophical and scientific subjects

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Smithsonian highlights

In conjunction with the *Treasures from the Shanghai Museum* exhibition, NMNH is offering a diversity of lectures, films and festivals through November. Highlights will include four evening lectures by noted scholars on Chinese art; noon lectures on the Peking Opera, Chinese horticulture, archaeology and natural history; and films on village life and culture (among them, a cartoon intriguingly entitled *The Dragon Wore Tennis Shoes*). All events are free; for a full listing, or for information about any other Smithsonian events, call 357-2700.

Special September exhibits and events

National Museum of American Art
Fantasy and Imagination: Sculpture by Eugenie Gershoy (through January 20) See *Highlights continued.*

National Museum of African Art
Patterns and Forms in African Art (through September 16).

Cooper-Hewitt Museum (New York)
Design in the Service of Tea (through October 28).
Note: the *Cut Paper* exhibition has been postponed until February 19, 1985.

National Museum of Natural History
Treasures from the Shanghai Museum: 6,000 Years of Chinese Art (through November 30).

National Portrait Gallery
Variations on a Theme: A Tribute to the American Musical Theater (September 13-15) Concert highlighting the hits of Irving Berlin, George Gershwin and others. For information, call 357-2920.

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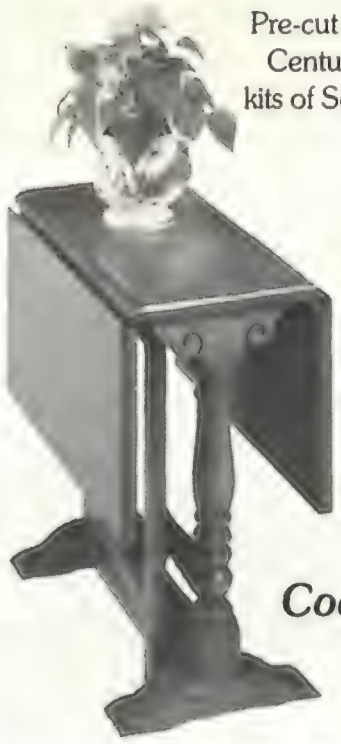

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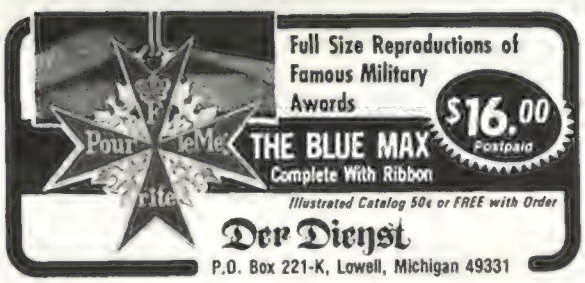
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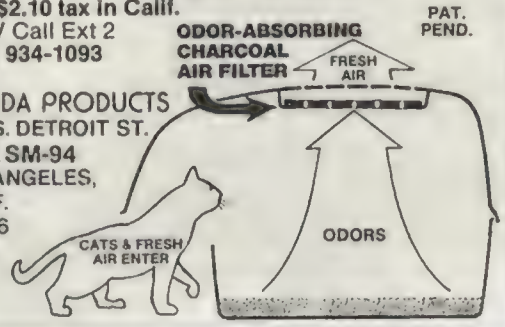

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The Art of Robert McCall (September 26-summer 1985) Major retrospective.
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Hirshhorn Museum & Sculpture Garden
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Smithsonian Galaxy: Short radio features.
Here at the Smithsonian: Two-minute TV features include a visit to the National Zoo's new Giant Panda Playground and the unveiling of a 19th-century bandstand.
Smithsonian World: hour-long TV special on PBS, September 5, 8 P.M., "Designs for Living."

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Ragtime Revisited—A Courtyard Concert (September 5; 7 P.M.) Potomac River Ragtime Ensemble performs the classics; complimentary wine will be served.
The Buck Stops Here (September 7, 9, 10) Choice of matinee or evening performances by Arrow Rock Lyceum Theatre portraying Harry S. Truman in song.
Tuesday Mornings at the Smithsonian (September 11, 18, 25; 10:40 A.M.) Lectures by curators on exhibit-making, connoisseurship of Chinese art, animal behavior in the wild. Call for details.
Past Visions of America's Future in Space (September 13; 8 P.M.) Lecture by science-fiction authority Frederick Ordway.
Audubon Lecture Series 1984-85 (Ten monthly lectures beginning September 17) Scientists present slide-illustrated lectures on the riches of nature.
Backstage at the Ballet (September 22; 7:30 P.M.) Lecture-demonstration by members of the American Ballet Theatre.
Keyboard Connections (September 23) Choice of morning or afternoon performance by jazz pianist John Malachi.
Jazz Inside Out (September 23; 1 P.M.) Joe Byrd, Chuck Rodd and Fred Karns

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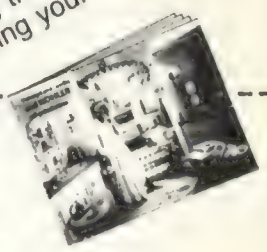

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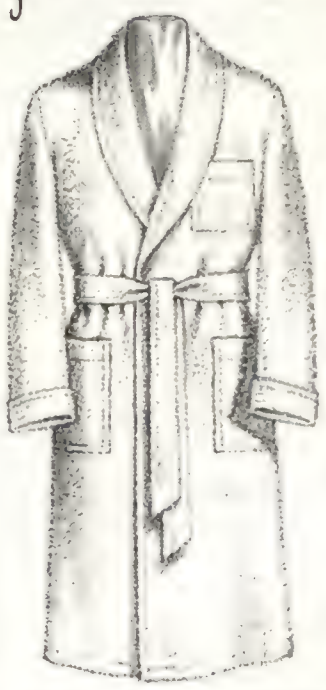

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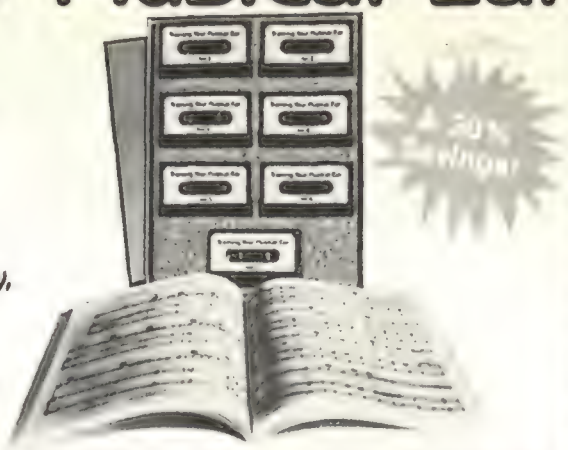

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reveal the inner workings of this art form.

Disney Animation (September 24; 8 P.M.) Veteran Disney animators Frank Thomas and Ollie Johnston discuss their work on *Bambi, Pinocchio* and other classic films.

Pennsylvania Avenue: Barrier or Breakthrough (September 24; 8 P.M.) Design and economic-development leaders from Washington, D.C., debate the impact of this redevelopment project.

Telescopes in Space: A Celestial Treat (September 25; 7 P.M.) The whys and hows of telescopes are explained by NASM curator David Devorkin.

Shanghai and the Origins of Chinese Civilization (September 27; 8 P.M.) Historian David Keightley explores the origins of Chinese civilization in a slide-illustrated lecture.

Trio Mexico (September 28; 7 P.M.) Concert in NASM's Sky Theater is followed by Mexican beer and snacks.

England As You Like It (September 29-30) Two-day seminar on the England of Chaucer and Shakespeare.

Regional Events Program

Associates in Washington and Montana will have the opportunity to meet Smithsonian curators and scientists when the Regional Events Program visits Pullman (September 13-16) and Bozeman and Missoula (October 4-9). The Pullman series features lectures and workshops on photography and designs from nature; the Montana series highlights paleontology, quasars and scientific illustration. Associates should have received invitations by now. For further information, write: Regional Events Program, A&I 1208, Smithsonian, Washington, D.C. 20560.

Contributing Membership Program

The Contributing Membership Program supports the Smithsonian's research and educational activities through annual membership contributions in six categories: Supporting, $50; Donor, $100; Sponsoring, $250; Sustaining, $500; Patron, $1,000; and the James Smithson Society, the highest level of the Smithsonian Associates, $1,500. (Contributions are tax-deductible within legal limits.) In addition to benefits of Smithsonian Associates, Contributing Members attend elegant evening previews of museum exhibitions; receive behind-the-scenes museum tours, a special edition of a richly illustrated Smithsonian publication and the Smithsonian Engagement Calendar. For further information, please contact the Contributing Membership Program, A&I 1190A, Smithsonian Institution, Washington, D.C. 20560.

Exhibition catalogs

Catalogs available at this time include:
Treasures from the Shanghai Museum (paper, $10.95)
Yesterday's Tomorrows (paper, $17.95; cloth, $29.95)
Visions of the Future (the art of Robert McCall; cloth, $9.98)

To order, send check or money order to: Museum Shops, Box 44083, Washington, D.C. 20026-0083. Include 15 percent of total purchase to cover postage and handling (minimum, $1.75).

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington. To sponsor a show in your community, write: SITES, Smithsonian, Washington, D.C. 20560. Here are some September exhibits:
Carmel, California (September 8-October 7) *Images of China: East and West*, Sunset Community and Cultural Center.
Fort Morgan, Colorado (September 8-October 7) *Jupiter and its Moons*, Fort Morgan Heritage Foundation.
Ottumwa, Iowa (September 1-30) *Buildings Reborn: New Uses, Old Places*, Indian Hills Community College.
Chisholm, Minnesota (September 8-October 7) *Franklin Delano Roosevelt: The Intimate Presidency*, Iron Range Research Center.
Hattiesburg, Mississippi (September 15-October 14) *World Print IV*, University of Southern Mississippi.
San Antonio (September 8-November 25) *Matchsafes: Striking Designs*, San Antonio Museum Association.
Seattle (September 8-October 7) *Know What You See: The Examination and Treatment of Paintings*, Charles and Emma Frye Art Museum.

Membership benefits when visiting the Smithsonian

"Planning Your Smithsonian Visit," a booklet replete with helpful information, is part of a free Associates' pre-visit packet; send postcard request or phone Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560, (202) 357-2700; for hearing impaired TDD (202) 357-1729. Allow two weeks for receipt.

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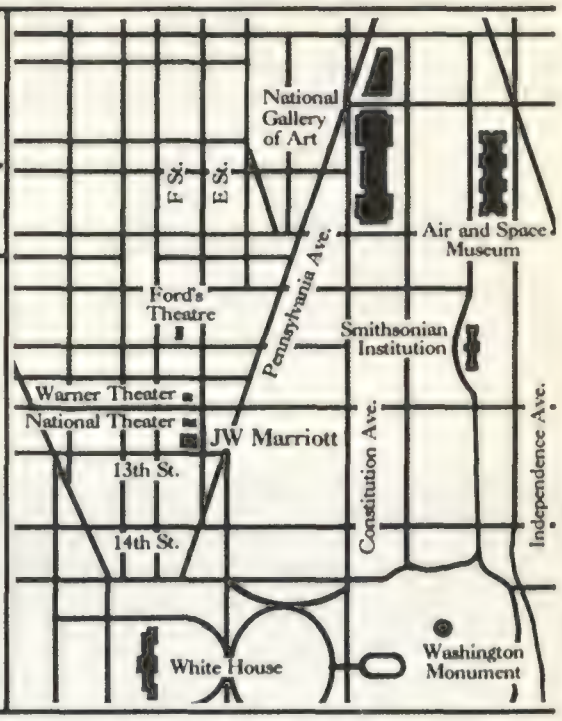

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Seeing the folly in ourselves

A small show at NMAA presents the fanciful works of a sculptor who has a very big sense of humor

Early in the century, a young woman named Eugenie Gershoy was awarded two scholarships to study at the Art Students League in New York City. There, she learned to model in clay from Alexander Calder and experimented with styles ranging from classical Greek to Hindu.

Gradually, Gershoy found her own style, and by the late 1930s she was producing exuberant figures that emphasized the funny side of human endeavor. Today, living and working at the Chelsea Hotel in New York (SMITHSONIAN, December 1983), she still makes her small sculptures (those shown below are between one and two feet high). She originally used papier-mâché, later developing a malleable dextrine-and-plaster mixture that dried hard but lightweight.

Gershoy believes that fantasy in sculpture functions as an "echo" of our changing world. Her people hang by their teeth (while trying to look graceful), balance elephants on their heads (while straining to keep from falling over) and get ignominiously scooped up and thrown by bulls. Her people, like most of us, are just trying to get through the day, and laughing at them helps us to laugh at ourselves. *Constance Bond*

Papier-mâché *Trapeze Artist* is among Eugenie Gershoy's earliest works.

Ill-Fated Toreador, from late 1930s, is made of dextrine mounted on wood.

The Very Strong Man, puffed up as he hoists elephant, shows Gershoy's wit.

Petroushka was done 30 years ago; today, Gershoy still works in New York City.

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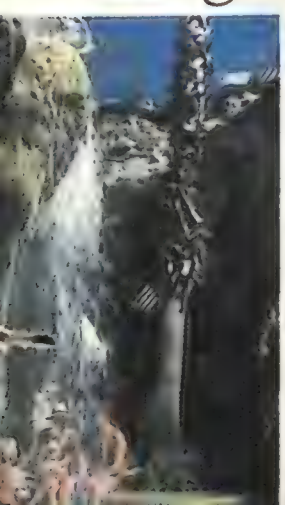

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Opera in New York October 18-21 or November 8-11: Attend performances and tour behind the scenes with an opera soloist.

LA in Style November 12-18: Discover exciting new art and architecture in Los Angeles and Santa Barbara. Visit museums, studios and private collections.

Everglades December 3-9: Observe birds and flowering plants while canoeing along the Ten Thousand Islands estuaries.

Christmas at the Smithsonian December 7-9: Welcome the holidays with a gala tree-trimming party in the castle and special tours of the museums.

Hawaii January 20-February 2 or February 17-March 5: Hike and camp on three of these enchanted Pacific islands.

Puerto Rico February 4-13: Discover exotic flowers, colorful birds and cascading waterfalls in tropical rain forests.

Yellowstone in Snow February 15-25: Ski across magical landscapes to observe wintering elk and bison, steaming geysers.

Baja Whale Watch February 22-March 2: Board the *Royal Polaris* in San Diego for an unforgettable trip down Mexico's Baja peninsula to observe gray whales.

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Gulf Islands September 6-12 or 13-19: Cruise between Vancouver and Victoria, British Columbia, on a 68-foot sailboat. Learn about the area's natural history, observe killer whales.

The Ancient World of Peru September 29-October 14: Visit Lima, Cuzco, Indian markets and amazing Machu Picchu.

Egypt and the Nile September 30-October 19: Voyage from Cairo aboard a chartered riverboat to impressive historic sites.

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Yucatán Adventure January 17-29 or February 14-26: From Mérida, tour extraordinary Maya ruins in the company of a pre-Columbian archaeologist.

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The Atlantic Crossing December 6-21: A sailing adventure from the Canary Islands to Martinique on the four-masted square-rigger, *Sea Cloud*.

Year-End Holidays

Pacific Coast of Mexico December 21-30: Beautiful uninhabited islands await your discovery on this adventure cruise between Puerto Vallarta and Mazatlán.

Christmas in Austria December 21-January 3: Enjoy the many cultural attractions of Salzburg and Vienna during the height of the holiday season.

Indian Wildlife Safari January 25-February 21: Travel by elephant and jeep to observe rare species of birds and animals in exotic India and southern Nepal.

A Hike in New Zealand February 6-22: From Lake Te Anau to Milford Sound, discover wild flowers, crystalline lakes and snow-capped peaks on the Milford Track.

New Zealand February 6-23: Relish glorious scenery on this in-depth tour with talks on natural history, the Maori and Parliament. Includes a visit to a home.

Indonesia March 10-31: Cruise beyond the ordinary to the islands of the Java Sea. Study natural history and observe local customs and traditional rituals.

Kyoto Seminar March 15-31: Live Japanese-style. Field trips complement lectures on art, history, religion and language.

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Digging Up Rome October 14-19: Well-known authorities on the art, architecture and fauna of the classical world use archaeological finds, eyewitness accounts and numerous slides and films to examine the art and daily life of this vibrant city at the time when all roads led there.

Aircraft Restoration: How To October 21-25: The master craftsmen of the National Air and Space Museum share their many techniques in Smithsonian workshops.

Genealogical Research October 21-26: Taught by well-known authorities, participants learn how to conduct research in major genealogical repositories.

Connoisseurship of Chinese Art November 4-9: Expert Shirley H. Ganse lectures on fine Chinese decorative arts and paintings in private and public collections, developing an eye for the best in terms of style and technique and detection of copies and forgeries. Includes private guided tour before public hours of the acclaimed exhibition, "Treasures from the Shanghai Museum—6,000 Years of Chinese Art," featuring hundreds of objects never before seen in the United States.

Golden Age of the Aztecs November 11-16: A popular pre-Columbian expert sheds the latest light on one of the great epics of history—the rise and fall of the complex Aztec civilization—in lavishly illustrated lectures and tours of a famous collection. Includes ancient masterpieces of art and architecture, recent important archaeological excavations in Mexico and a special guided tour of the outstanding pre-Columbian collection of 400 items at Dumbarton Oaks, Harvard University's renowned research center.

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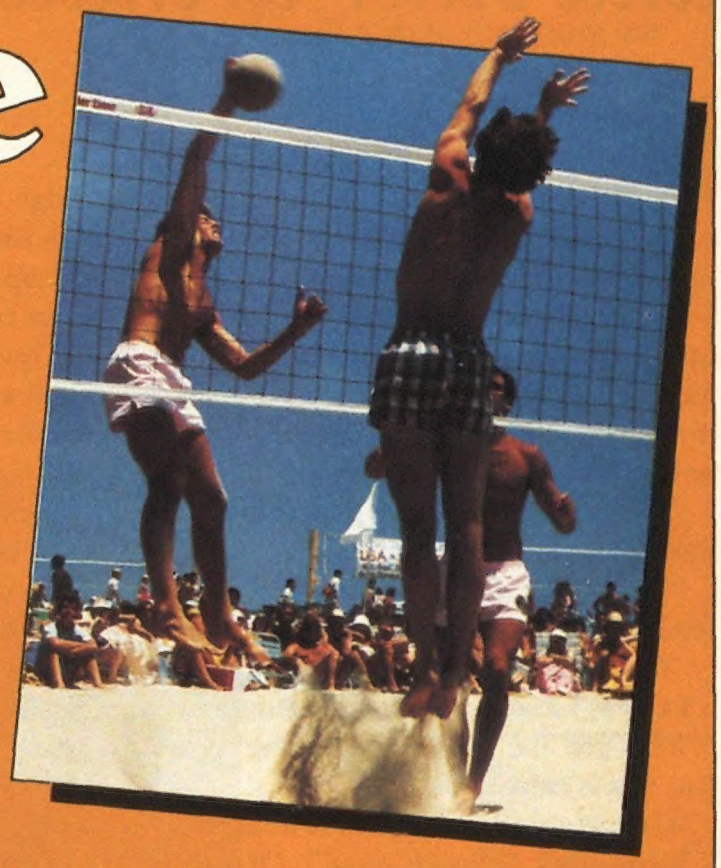

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By Michael Kernan

Remember milk bottles and other archaic stuff?

I was talking to a grizzled old neighbor in a California suburb not so long ago, and he was Remembering When.

"Why, I recall," he chanted, "when all this was nothin' but a cow pasture. We used to go fishin' in a crick right over there where that—uh, what they call it now—that Greenlawn Court is."

"Wow!" I said. This guy must be a hundred years old. History on the hoof.

"When was that?" I asked, my eyes already filming over with nostalgia.

"Oh, eight years ago. . . ."

I know, I know, we are all getting older. Where are the snows of yesteryear, etc. But this is ridiculous.

Time is going faster than it used to.

Remember "church keys"? Of course you do. Only an infant wouldn't recall opening beer cans with that little triangular blade, usually on the other end of a bottle-cap hook. Every market and liquor store had them. Gave them away. Gift shops sold fancy church keys with wooden handles or plastic sculpted women's legs. Now you have to pay for a plain one—if you can find it outside an antique store.

Milk bottles. What happened to milk bottles? They were of thick glass and they curved abruptly inward at the neck, as if someone had tried to strangle them, and bulged out again in the section where the cream theoretically collected. Had a crimped paper cap and an inner cap of cardboard that fitted into the lip of the mouth. There was a half-moon-shaped tab you picked at with your fingernail to raise it so you could pull the cap out.

Of course, once you start thinking about milk bottles you can get sucked practically into prehistory, with milkmen and those wood-and-steel milk crates. And grocery delivery boys, and icemen and—whoops, that's going too far.

But certainly everyone remembers bridge tables. The wooden folding kind with the rickety legs that screeched when you opened them. At first they all had green baize tops, but later the gift shops sold quilted, form-fitting covers with elastics that went under the corners. When was the last time you saw one?

Or oilcloth? Is oilcloth—to cover kitchen tables and cookbooks, to line drawers and shelves—lost to us? Celluloid? Bakelite, the 75-year-old father of plastics? Cellophane? Cellophane was so big that Cole Porter wrote a song about it: "You're the purple light of a summer night in Spain . . . you're the National Gallery, you're Garbo's salary, you're Cello-phane. . . ."

What about "spoolies"? They were those rubber curler things for home permanents. It wouldn't have been the '50s without them, but you hardly ever see them anymore, except in '50s movies, tenderly preserved along with various forgotten Hollywood stars, like the laughing young people on Grecian urns. Maybe somebody will write an ode to them. The stars, I mean, not the spoolies.

Surely there are people barely turned gray who used fountain pens and carried a little bottle of ink around with them at school (with a tiny glass pocket inside near the mouth so you wouldn't have to dip the pen all the way to the bottom). I can tell you exactly where I was on the day in 1942 I first heard about an amazing new invention, the ballpoint pen. I was at school in Bonita, California, reading a copy of a Sunday supplement, as a matter of fact. There was a full-page ad about the wonder pen. You could send in and buy one for only $10.

Ski pants. Wool ski pants. They were baggy, with elastic ankles, but baggy was stylish then. The stuffed-in-the-boots look was considered dashing. Paratrooper pants. The ski boots that went with them were just square-toed hiking boots with copper rims around the edges of the soles. You could wear them for other things. Remarkable concept.

I don't expect anyone to go back with me to the days when a ski binding was a leather strap that you buckled over your galoshes. But ski pants. What was the matter with those ski pants? They were nice and warm, and you could put them on over your regular clothes. Their only problem (aside from the fact that once they got wet they stayed wet and left your legs navy blue) was that they had no sex. Stretch pants brought a whole new dimension to skiing.

It used to be that some things were common: wire-basket popcorn poppers on long steel stems so you could shake them over the open fire . . . BB guns with wooden stocks . . . metal cookie cutters. . . .

But we are getting arcane. And this is a serious subject. Do you realize that manual typewriters are headed for the scrap heap of history? The Smithsonian even has some on exhibit.

And carbon paper is going fast.

Carbon paper. . . . Is there a single soul on the entire planet who will miss carbon paper? Or its companion, smudged fingertips? Or the reversed writing on the wrong side of the page when you put the carbons in backwards? Once I lost the original, discovered I had reverse-copied four consecutive pages and had to read them in a mirror. To retype the passage I had to prop the mirror on my desk—it was a hand mirror, and round, and took 15 minutes to prop.

Athletic records are falling every week or so. Remember how long it took to get the four-minute mile? Time *is* moving faster. If you stare at the minute hand of a clock long enough you can actually see it move. If, indeed, it has any hands at all.

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There's a lot more to tell. But unlike the Crown Victoria, we seem to have run out of room.

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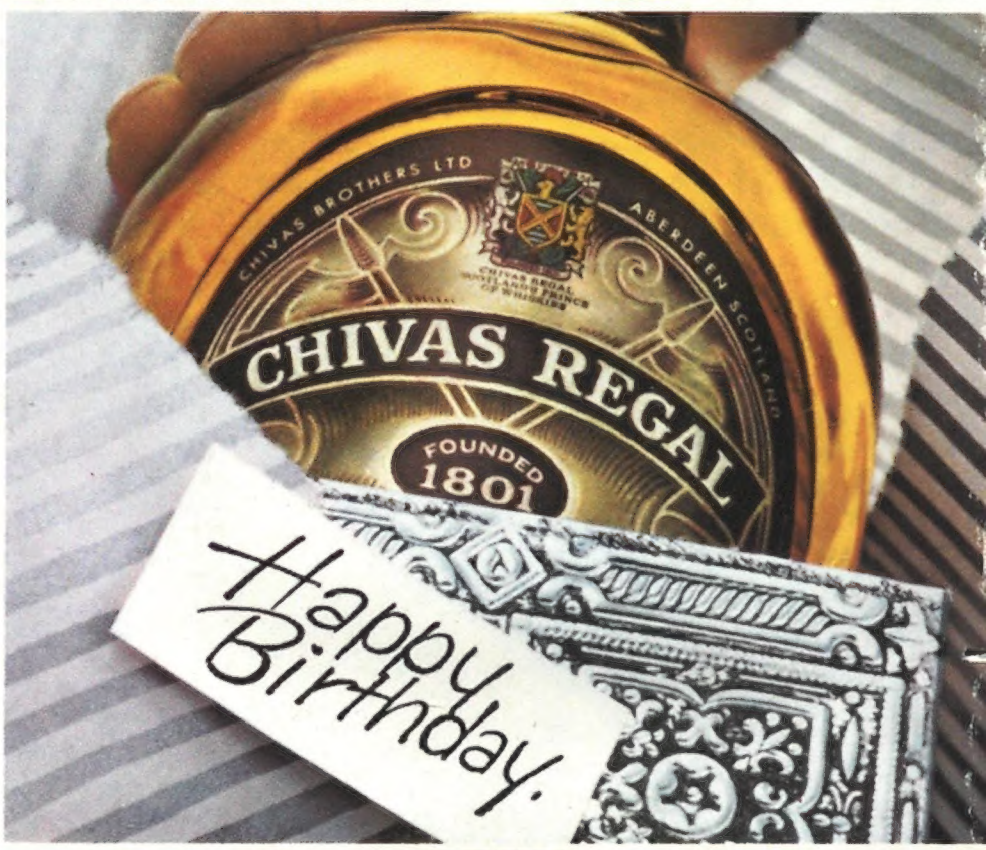

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